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COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper Second-class postage paid at Framingham, Mass. and additional mailing offices © 1982 by CW Communications/Inc.

; $44/year December 20, 1982 Vol. XVI, No. 51

NEWSPAPER

American Bell on the Mark, But Net 1000 Still Not Set

By Bruce Hoard
CW Staff

American Bell, Inc., the unregulated subsidiary of AT&T, will officially begin operations Jan. 3 with one widely known product, 28,000 employees and a shroud of mystery over its future plans.

The product in question is Advanced Information Systems (AIS)/Net 1000, an intelligent, user-programmable network. However, Net 1000 is still in the beta test stage at Transamerica Corp. [CW, Dec. 13], and Transamerica has made it clear the network will have to prove its worth before any commitments are made.

Net 1000 is important to computer users because it reflects the fact that AT&T is entering the computer field, according to Kenneth Bosomworth, president of International Resource Development, Inc.

In an interview last week, he said that AT&T, through American Bell and Net 1000, is entering the computer arena "both in terms of services and probably in terms of manufacturing and marketing of computers themselves."

(Continued on Page 6)

Shop by
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Stocking Stuffer

F.A.O. Schwarz may be some distance away from the North Pole, but shoppers using a microcomputer-based 'helper' at the New York toy store can catch a glimpse of what might be in Santa's toy sack this Christmas. Story on Page 12.

AT&T Rolls Out Blueprint Of Its Reorganization Plan

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — AT&T last week unveiled its long-awaited plan for separating the assets, the work forces and the stock ownership of the Bell system's 22 operating companies in compliance with the settlement of the government's antitrust case against the telephone company.

The 471-page document describing the reorganization plan is subject to comment from interested parties. Judge Harold H. Greene, who presided over U.S. vs. AT&T, is allowing 110 days for these comments and for subsequent responses by AT&T and the Justice Department, after which he will act.

Greene's approval is necessary before the divestiture, scheduled for Jan. 1, 1984, takes place.

Major Provisions

These are the major provisions of the reorganization plan:

- Each of the 22 Bell operating companies will create two subsidiaries, one to handle traffic between their new service territories, known as Local Access and Transport Areas, and the second to handle the sale and maintenance of terminal equipment.

On the divestiture date, each Bell operating company will transfer both subsidiaries to AT&T. "Thereafter," according to AT&T, "the 22 operating companies will be grouped into seven regional holding companies, and common stock in the latter will be distributed to AT&T shareholders."

- Assets will be divvied up between AT&T and the operating companies on the basis of predominant use. Common Channel Interoffice Signaling facilities will remain with AT&T but will be leased to the operating companies for their use in completing intra-Lata calls.
- The Bell system work force will also be assigned on the basis of whether they work predominantly for a Bell operating company or for the undivested part of AT&T (which will be comprised of equipment manufacturer Western Electric Co., Bell Telephone Laboratories, Inc., the Long Lines Division and corporate management and administrative departments).

The division of personnel

(Continued on Page 4)

DP Execs Reading Instead of Traveling To Beat the Recession

By Bill Laberis
CW Staff

In these times of recession-squeezed DP budgets, how are management information systems directors keeping abreast of product and technology developments to ensure that their shops operate on a competitive cutting edge?

According to an informal *Computerworld* telephone survey, they are reading more technical and industry journals and relying increasingly on local trade organizations and user groups. And they are leaving town for trade shows and conferences much less than in years past.

Moreover, some managers surveyed said that budget-imposed travel limitations have forced them to take another look at industry trade shows and question the value of shows and conferences in terms of continuing DP education for MIS managers. "In a lot of ways, I think the trade shows were just an excuse for an excursion away from the office in the days when our budgets were, shall I say, more flexible," admitted a DP executive at PPG Industries, Inc. of Pittsburgh, Pa.

"We've got to watch our costs a lot more these days

(Continued on Page 8)

Industry Spotlight

Used Computer Dealers Feeling Market Squeeze

By Bill Laberis
CW Staff

"It's like being stuck in a vise, with IBM squeezing you on one side and this wretched economy on the other. Together they are not making life very pleasant for us."

That's how one used computer dealer bluntly described present conditions in the used computer marketplace. His views were echoed by a used equipment market analyst: "The [used computer] dealers were willing to put up with the recession, but then IBM dropped the biggest bombshell, the IBM Credit Corp.," he said. "They felt the recession would go away. They know damn well IBM won't."

Thus, the used computer market once again finds itself in the throes of change and uncertainty, bucking elements over which it has little, if any, control. For users, however, such activity could

(Continued on Page 10)

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THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
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Second-class postage paid at Framingham, Mass., and additional mailing offices PN127420. *Computerworld* (ISSN-0010-4841) is published weekly, except: March (7 issues), June (5 issues), September (6 issues), November (6 issues), December (4 issues) and a single combined issue for the last week in December and the first week in January by CW Communications/ Inc., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

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$1.50 a copy: U.S. — $44 a year; Canada, Central & So. America — $110 a year; Europe — $165 a year; all other countries — $245 a year (airmail service). Four weeks notice is required for change of address. Please allow six weeks for new subscription service to begin.

Computerworld can be purchased on 35 mm microform through University Microfilm Int., Periodical Entry Dept., 300 Zeeb Rd., Ann Arbor, Mich. 48106. Phone: (313) 761-4700. *Computerworld* is indexed: write to Circulation Dept. for subscription information.

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Enthusiasm, Four-Year DP Degree Win Job Offers in Data Processing: Survey

By Susan Blakeney
CW Staff

JERICHO, N.Y. — What kind of background and what type of personality are employers really looking for in a data processing employee?

According to a recent national survey, the most highly prized education of all is the one that ends with a four-year DP degree and the most important personal characteristic is enthusiasm.

In the banking industry, for example, 60% of the banks surveyed said they hired only holders of four-year computer science degrees for their DP departments. The remaining 40% consider vocational school graduates as well as college graduates from disciplines other than DP.

The nationwide survey was conducted by Robert Half of Long Island, Inc., with the cooperation of Robert Half, Inc. offices around the country. It polled more than 35 top firms across the country.

In the survey, a number of banks cited internal transfers as one of the most desirable routes for DP hires. "Employees who have a good work record and have passed two Wolfe [Computer Aptitude Testing, Ltd. computer aptitude] tests with 80% or above" are the favorites at European American Bank in Westbury, N.Y., according to Assistant Vice-President Joseph O'Day.

The banking industry's hiring practices were fairly representative of those at insurance, government agencies and consulting companies covered by the survey. The overwhelming majority prefer four-year computer science graduates, and all admitted to hiring a high percentage (50% or above) of internal transfers for their DP departments.

In the public utility sector, however, non-DP majors were considered just as attractive as DP graduates from four-year institutions. This group of employers said they too draw heavily from in-house transfers, but were unanimous in noting that many of their hires are the results of outside advertising. Consulting groups admitted hiring almost two-thirds of their personnel through classified ads.

This was not the case with banks or insurance companies, which reported hiring only 40% and 25%, respectively, of their DP staffs through outside ads. The government apparently hires equally from in-house and ads.

Other methods of hiring pinpointed by the survey included on-campus recruiting, employment agencies, walk-ins, unsolicited resumes and phone calls, all of which were found to be less popular than taking people from in-house. Insurance companies, the government and public utilities were the biggest on-campus recruiters, followed by bankers and consulting employers.

Thirty-eight percent of the consultants surveyed said they use employment agencies to fill DP slots, while only 20% of the banks do. None of the insurance or public utility companies use agencies.

Walk-ins and resumes weighed about evenly across the board. While not the preferred method of hiring, all of the companies surveyed admitted hiring 20% or more people from these methods.

Personality Traits

In descending order of importance, banking institutions seek people who display enthusiasm, a willingness to work and eagerness to learn and those who seem career-oriented and communicative and "team workers."

Insurance companies look for enthusiasm, agressiveness, the work ethic, a willingness to learn and the ability to be a team worker in DP job applicants. Consultants want self-starters and people who display enthusiasm and aggressiveness.

Public utilities, on the other hand, try to hire people with patience, flexibility, willingness to learn, communication skills and the ability to work as part of a team. Government agencies look for enthusiasm, dedication, work ethic, and technical skills, according to the survey.

Survey Finds Software Experts Most Valuable Employees in '83

PHILADELPHIA — Computer software professionals will be the group of employees most highly prized by U.S. companies in 1983, according to a recent nationwide survey conducted by Fox-Morris Personnel Consultants.

The survey — one of six done annually on different employment areas by the firm — put the software pros before engineers and health care specialists.

Overall demand for computer experts will rise 14% over 1982 levels, while companies' broad-based engineering needs will jump 11.1%, Fox-Morris said. In the multibillion-dollar health care field, the survey predicted there will be a 13.3% growth in the demand for talent.

In its midsummer survey dedicated solely to the DP profession, Fox-Morris found a "steady demand" for programmers, analysts, auditors, engineers, managers and other software experts. It also found that systems/software programmers with 4.2 years of experience were 10.1% more in demand than they had been a year earlier.

Applications programmers with 3.6 years of experience trailed closely, registering a growth in demand of 9.6% over the previous year.

Referring to demand for software professionals, the more recent survey said, "The ubiquitous use of computers by business and industry will continue to trigger an insatiable corporate appetite for specialists at every level in the data processing field . . . Computer programmers will be tops on everyone's list."

The survey report is available free from Fox-Morris' Data Group at 1500 Chestnut St., Philadelphia, Pa. 19102.

This Week

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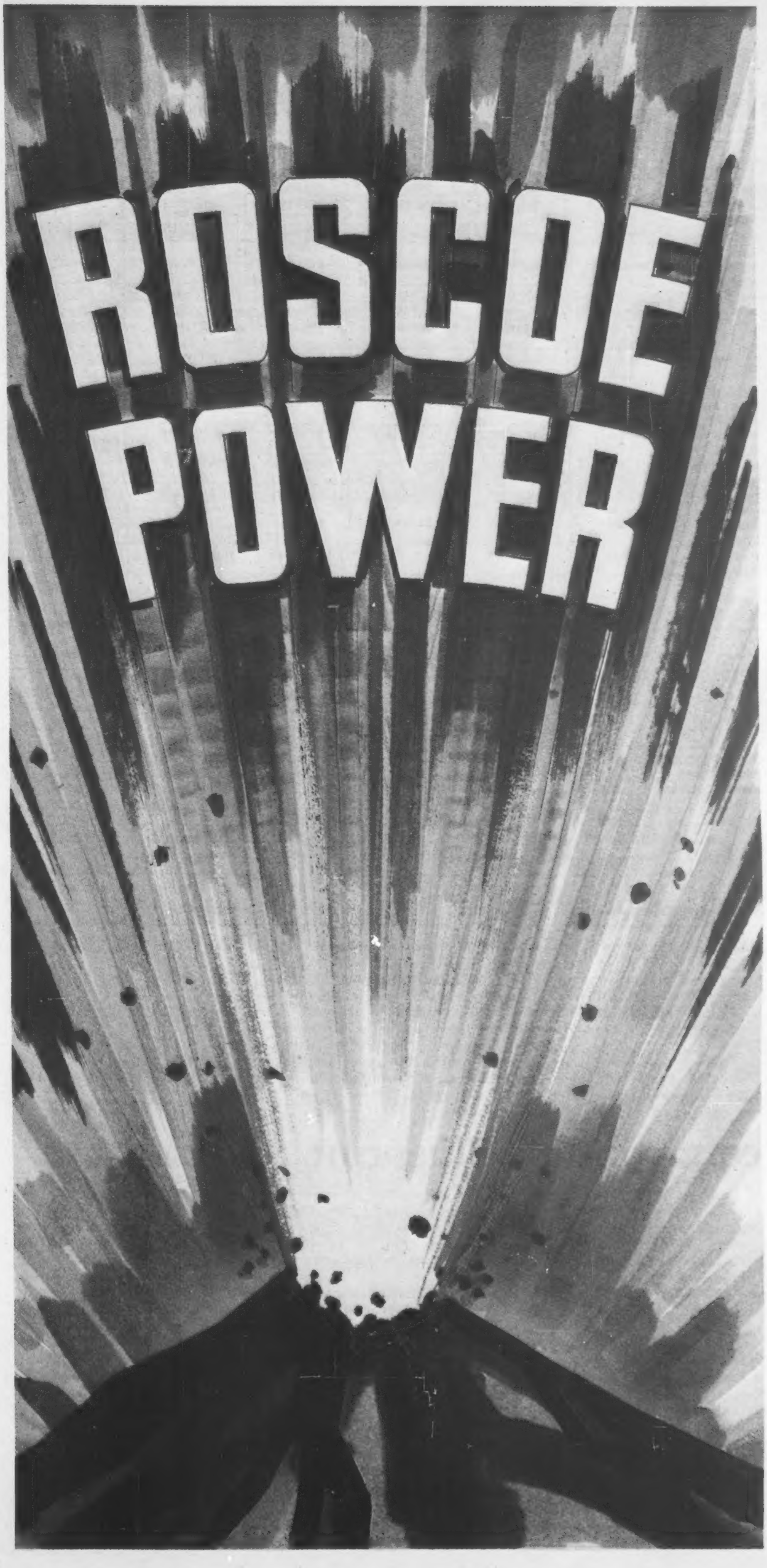

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DBMS Revenues to Decline by '86

End-User Tools Expected to Hurt DBMS Mart

By Lois Paul
CW Staff

FRAMINGHAM, Mass. — The clamor for end-user computing will take its toll on the market for traditional data base management systems (DBMS), according to a recent study by International Data Corp. (IDC).

By 1986, the revenues generated by DBMS products will decline as a percentage of packaged utility software sales, according to the IDC report, "The DBMS Marketplace." A key reason is that the popularity of nonprocedural languages and other end-user tools will affect the impact the traditional DBMS vendors have made on the utility software marketplace.

The success of the nonprocedural DBMS languages in the marketplace is a relatively new phenomenon, IDC reported, and one that will not be short-lived. For the most part, these vendors are targeting large management information systems departments with products such as Information Builders, Inc.'s Focus, National CSS, Inc.'s Nomad II and Henco, Inc.'s Info, which are geared to the information centers that are springing up in increasing numbers of installations.

These products are intended to provide end users with easy single-language access to the computer, the researchers continued. IDC expects that the market for these systems will top $83 million this year.

Within the DBMS vendors in the IBM-compatible marketplace, Cullinane Database Systems, Inc., Computer Corporation of America and Applied Data Research, Inc. are expected to post above-average growth during 1982, the report noted. By year-end, these three firms are expected to increase their respective market shares by a full percentage point each.

These vendors, too, are modifying their product lines to compete in the more end-user-oriented marketplace. One direction a number of them are taking is toward integrated data base management systems. In line with this, Cullinane acquired Computer Pictures Corp., which had developed the Trendspotter graphics system that is interfaced to Cullinane's IDMS, and Infodata Systems wrote a text processing capability for its Inquire DBMS.

The tug-of-war in this market between independent software suppliers and the hardware manufacturers continues, according to the report. In 1981, DBMS packages made up 22% of the $605 million generated by independent vendors in the utility software marketplace; the hardware manufacturers' efforts in the DBMS business contributed somewhat less to the $805 million that IDC believes they made from the delivery of utility programs.

At the end of 1981, there were well over 1,400 IBM IMS products running on IBM major mainframe families, and more than double the number of DL/1 packages. This indicates that IBM is the DBMS market leader, with about a 50% market share.

"It goes without saying that the DBMS products sold in 1987 will have different capabilities from the ones delivered today," the researchers said. "The impact of new technology will most likely bring new vendors to the forefront, as well as fragment the market into a number of niches, defined not only by the types of data structure features, but by the variety of ways computing power will be distributed."

So what is in store for current and prospective users of DBMS products? The IDC researchers said, "Debates on the future of the DBMS industry hinge upon research conducted in distributed resource systems and networking, high-level user-friendly languages and the implementation of relational systems, hardware-based systems, content-addressable memory and faster computers."

The full report, "The DBMS Marketplace," is available for $2,500 from IDC, 5 Speen St., Framingham, Mass. 01701.

Vendor	Product	1981 Corporate Revenues	1981 DBMS Revenues	E1982* Corporate Revenues	E1982* DBMS Revenues	% Change DBMS Revenues
Applied Data Research	Datacom/DB	$46 Million	$8 Million	$65 Million	$12 Million	50%
Cincom Systems	Total; TIS	$45 Million	$26 Million	$53 Million	$32 Million	23%
Computer Corporation Of America	Model 204	$10 Million	$6 Million	$13 Million	$9 Million	50%
Cullinane Database	IDMS	$40 Million	$28 Million	$63 Million	$40 Million	43%
Intel/MRI	System 2000/80	$22 Million**	$22 Million	$27 Million	$27 Million	23%
IBM	IMS; DL/1 SQL/DS	$1,265 Million**	$93 Million	$1,580 Million**	$120 Million	22%
Software AG	Adabas	$22 Million	$19 Million	$27 Million	$23 Million	21%
International Data Base Systems	Seed	$1.5 Million	$1.5 Million	$2 Million	$2 Million	
Advanced Data Management	DRS	$2 Million	$1.5 Million	$2 Million	$1.5 Million	
California Software Products	Maxximum	$1 Million	Insignificant	$1 Million	Insignificant	
Nixdorf Computer Software	NCSC Database	$10 Million	Insignificant	$12 Million	$1 Million	
Relational Software	Oracle	$3 Million	$3 Million	$6 Million	$6 Million	
Scientific Information Retrieval	SIR/DBMS	$1 Million	$1 Million	$2 Million	$1.5 Million	
United Software Systems	Clio			Insignificant	Insignificant	

*Estimated
**Total Revenues Packaged Software Only

Source: IDC

Calendar Year Revenues of IBM-Compatible DBMS Software Vendors

Vendor	Product	1981 Corporate Revenues	1981 DBMS Revenues From IBM Base	E1982* Corporate Revenues	E1982* DBMS Revenues From IBM Base
Henco	Info	$2.5 Million	Insignificant	$4 Million	$1 Million
Infodata Systems	Inquire	$6 Million	$6 Million	$10 Million	$10 Million
Information Builders	Focus	$6 Million	$6 Million	$15 Million	$14 Million
Mathematica Products Group	Ramis II	$15 Million**	$13 Million	$18 Million**	$16 Million
National CSS	Nomad 2	$10 Million**	Not Available	$12 Million**	Insignificant
Battelle	Basis	$5 Million**	$5 Million	$6 Million**	$6 Million
Others			$3 Million		$4 Million
Total			$33 Million		$50 Million

*Estimated
**Total Revenues Packaged Software Only

Source: IDC

Calendar Year Revenues of Suppliers of IBM Mainframe-Compatible Nonprocedral DBMS-Based Languages

AT&T Unrolls Reorganization Blueprint

(Continued from Page 1)

and property will be made prior to divestiture to allow for a "test run." The plan provides for a one-year "true-up time" following divestiture; at that time adjustments in personnel and property assignments can be made.

- AT&T shareowners "will lose no equity as a result of the plan," AT&T said. They will retain their present number of shares in the undivested AT&T; however, to compensate for the drop in the value of those shares generated by the transfer of assets to the operating companies, they will receive one share in each of the regional holding companies for each 10 shares they now own in AT&T.
- AT&T, along with competing long-distance carriers, will pay an access charge for use of Bell operating company facilities. At the press conference here last week during which the reorganization plan was disclosed, AT&T Vice-President and General Counsel Howard Trienens said he expects the Federal Communications Commission (FCC) to issue guidelines regarding the access charges "before the end of this year," after which the Bell operating companies will file tariffs with their respective state commissions and with the FCC.
- A central organization, providing a single point of contact for dealing with the national security-related communications needs of the Department of Defense, will be established by AT&T and transferred to the seven regional holding companies prior to divestiture.

Besides physical assets and rights to technical information, this transfer will include about 8,800 AT&T personnel, of whom about 6,600 are technicians involved in network planning, software development and related support.

In addition, "as reinforcement of the Bell system's national security responsibilities, the new centralized organization will establish a national alert center linked to local alert centers in each operating company." Computerized control systems used in the everyday operation of the nationwide telecommunications network will be transferred to the central organization at the time of divestiture.

- AT&T will also establish for each regional company an organization to provide and maintain cellular mobile telephone service.

Bank of America, Merrill Lynch Hit by Scam

By Jeffry Beeler
CW West Coast Bureau

LOS ANGELES — Insiders at a major brokerage house and at the U.S.' largest bank secretly reprogrammed their employers' mainframes as part of an alleged scheme to rob the two organizations of more than $200,000.

One of the suspected "inside men" is Bank of America computer operator Darryl Robinson, 21, who has been arrested and charged with one count of conspiracy and two counts each of grand theft and attempted grand theft.

The other insider, reportedly an employee of Merrill, Lynch, Pierce, Fenner and Smith, Inc., has yet to be arrested by the Los Angeles County District Attorney's office, which is continuing to investigate the case.

Also taken into custody and charged in connection with the alleged computer-aided theft scheme were Barron Gardener and Ronald Miller, both 28. Gardener, owner of Barron's Moving and Storage, Inc., faces one count of conspiracy, four counts of grand theft and two counts of attempted grand theft, the same charges recently filed against Miller, a sheet metal worker with Rockwell International, Inc.

Other suspects are also still under investigation in the case, according to a spokesman for the district attorney's office.

Unauthorized Programming

Both the Merrill Lynch and Bank of America theft schemes relied heavily on unauthorized programming changes to the organizations' local information systems. In the Bank of America caper, a system in the institution's international banking office here was allegedly reprogrammed by Robinson to inflate the balances in three accounts that had been opened earlier by his suspected co-conspirator, Gardener.

At Merrill Lynch, where Gardener also had accounts, an unidentified employee illicitly modified the brokerage firm's electronic records to create the false impression that the accounts were already approved for disbursement, the district attorney's spokesman said. In fact, he added, the accounts were opened by Gardener with checks later found to be bogus.

Although Assistant District Attorney Steve Baron declined to reveal exactly how the two alleged theft schemes worked, he did describe the crimes as relatively easy for the defendants to perpetrate. "All they really needed was to have a terminal operator enter a message saying that a bad check had in fact been cleared for deposit and that withdrawals could then be made against the resulting new account," Baron said.

At both Merrill Lynch and Bank of America, the purported theft schemes followed basically the same pattern. Gardener first opened accounts at the two institutions by allegedly writing and depositing worthless checks under an assumed name. A few days later, he returned to the same organizations and presented them with a second set of checks bearing much greater amounts than the sums he had originally deposited.

On Sept. 17, for example, Gardener arrived at the Bank of America's nearby Gardena branch and opened an account with a phony $1,000 check, according to the district attorney's spokesman. On Sept. 21, he reappeared at the identical branch and cashed a check for $8,500, the spokesman said.

As a result of Robinson's alleged reprogramming, the bank's information processing system incorrectly listed the balance in Gardener's Gardena account as $35,000 — far more than was necessary for the $8,500 check to be accepted.

Gardener is also alleged last September to have opened accounts at the Bank of America's nearby Carson and Torrance branches. Altogether, he and his two suspected accomplices reportedly bilked the three bank branches of $17,000.

During its subsequent investigation of the computer-aided theft scheme, the district attorney's office said it was greatly aided by the Bank of America's existing security safeguards. "The bank has a system that allowed it to tell in seconds precisely where the [unauthorized programming changes] were made and who was operating the terminal in question at that particular moment," the spokesman said.

OA/Networks Meet Slated for Jan. 10-13

WAYLAND, Mass. — A four-day briefing on office automation and networks will be held in Boca Raton, Fla., Jan. 10-13 and in Vail, Colo., Feb. 14-17. The briefing will be sponsored by the National Council for Education on Information Strategies.

Thomas R. Billadeau, president of the Office Systems Consulting Group, will speak on office automation and data communications consultant Morris Edwards will talk about networks.

The registration fee is $395 each for the office automation and networks seminars. For both seminars, the fee is $750, the National Council for Education on Information Strategies said from 286 Boston Post Road, Wayland, Mass. 01778.

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Accounts Payable	☐	☐	☐	☐	☐
Accounts Receivable	☐	☐	☐	☐	☐
Base Material Requirements Planning	☐				
Bill of Material Processor	☐			☐	⊡
Customer Order Processing	☐			☐	⊡
Fixed Assets and Depreciation	☐		☐		☐
Full Material Requirements Planning	⊡				
General Ledger	☐	☐	☐	☐	☐
Inventory Management	☐			☐	☐
Job Costing	☐				

	DEC	DG	HP	TI	WANG
Labor Performance	⊡				
Mailing List	⊡			☐	⊡
Order Entry/Billing	☐	☐	☐		☐
Payroll	☐	☐	☐	☐	☐
Professional Time and Billing	☐				
Purchase Order/Receiving	☐			⊡	⊡
Report Writer	☐				
Sales Analysis	☐		☐		⊡
Shop Floor Control	☐				
Standard Product Costing	⊡				
Standard Product Routing	☐				

Key: ☐ = Available Now ⊡ = Under Development

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CW 122082

MIT's Papert Quits French Research Center

By Susan Blakeney
CW Staff

CAMBRIDGE, Mass. — Dr. Seymour Papert, an MIT computer scientist best known for his work in artificial intelligence and the development of the Logo computer language, has resigned from his post as chief scientist of the newly established French computer research center, the Centre Mondial pour la Micro-Informatique.

Conflicts over the center's official purpose as well as differences of opinion with the center's director, Jean-Jacques Servan-Schreiber, reportedly precipitated Papert's departure.

In an earlier report, *The Boston Globe* cited Papert as saying the original charter of the French center — to help develop computing in Third World nations — had been "sabotaged" and that the center is being used as a marketing vehicle for French computer equipment.

Papert also accused Servan-Schreiber, an internationally known author (*The American Challenge* and *The World Challenge)*, futurist and politico [CW, Feb. 8, 1982], of misusing the talents of the scientists he had assembled: "[Servan-Schreiber] used these people in order to legitimate his own political aspirations, to give the appearance of scientific backing for the plan he was presenting to [President Francois] Mitterrand.

"As soon as he got what he wanted, he dumped the people he didn't like," Papert told the *Globe*.

In a recent telephone interview, Servan-Schreiber admitted only that Papert "was not very happy with the French center's policies." When asked for further comment, Servan-Schreiber said, "I respect his opinions."

The idea for the world center was born three or four years ago, according to an MIT spokeswoman. Papert claimed that he was largely responsible for developing the center's original concept, but the plan was submitted for Mitterand's approval by Servan-Schreiber. "This thing was launched as what I think was one of the most inspiring and idealistic sounding projects for turning science to the benefit of humanity," Papert said earlier.

Unfortunately, the turning of science toward the benefit of humanity apparently did not ensue to his satisfaction. Papert illustrated this point with one of the center's cases, in which a Senegalese official has requested additional computers. According to Papert, Servan-Schreiber told that government that it would have to "wait until the French were ready to supply a French machine."

Another MIT scientist, Dr. Nicholas Negroponte, has reportedly stepped in to take Papert's place, but Servan-Schreiber has denied Papert's resignation from the center.

Michelle Gainnard, a spokeswoman for the French center, commented that although Papert had been around for the center's opening last February, he was only in Paris one week every two months since then. She said that the center has had no news from him in 2½ months, so "we are working without him."

She also added that the center's work has been progressing successfully and its present staff of 70 will expand to 110 next year. Another center is being planned for Colombia, Gainnard said.

Mystery Shrouds American Bell's Plans

(Continued from Page 1)

Products he expects to see from American Bell in addition to Net 1000 include a Unix-based minicomputer, modems, multiplexers and "perhaps" a microcomputer. American Bell has already announced the availability of a modem, local channel controller, two matrix printers and two teleconferencing bridges.

Bosomworth described Net 1000 as a time-sharing, computer services type of product designed to provide services not currently available through time-sharing companies. One such function is helping large computer network users integrate data from multiple locations.

"It provides them with something they really haven't had," Bosomworth said.

The network could also allow users to divest certain data communications equipment such as IBM front-end processors and 3270 terminals, he said, adding, "But I don't see any users rushing to do that."

Pricing and geography will be crucial determinants in the success or failure of Net 1000, especially in the beginning. In fact, pricing will continue to be important if projections are met and the network becomes "quite ubiquitous" geographically by 1983 or 1984, Bosomworth noted.

The service cost of providing Net 1000 will determine pricing, he continued, and these service costs will be determined by the new company's ability to handle data at a cost no higher than that offered by such competitors as National Data Corp., Rapidata, Inc. and Tymshare, Inc.

The top managers at American Bell will be Charles Marshall, chairman and chief executive officer, Randall L. Tobias, president, American Bell Consumer Products, and Archie J. McGill, president, Advanced Systems Division.

At a press conference last week, they said American Bell was also interested in marketing videotex equipment.

Asked if he thought that would happen, John Gantz, vice-president of publications at International Data Corp. (IDC) and a veteran Bell-watcher, said, "I think so. I think they may also learn to regret it.

"Certainly, in-the-home videotex is not paying off and won't for a long, long time. And in the office, it's simply a very constricted way to obtain data base access," he said.

Gantz feels that American Bell will be aggressive, showing marketing "muscle" no one expected from the new firm. He cited innovative channels of distribution, quicker product introductions and products "designed to kill the competition."

Although Net 1000 was designed as an intercompany network, the IDC vice-president claimed it will be very popular for intracompany communications. It is becoming an answer for companies that want an intracompany network with "a fixed number of types of terminals talking to a fixed number of hosts," he said.

The demand for network nodes may outstrip American Bell's ability to meet it, forcing the unregulated AT&T subsidiary to scramble in supplying the nodal processors, Gantz said. After the demand is met, Net 1000's masters can turn their attention to what he called "those innovative applications SBS [Satellite Business Systems] looked for and never found."

A Complicated Question

The question of who will be selling what among AT&T and its divested empire as American Bell, Inc. comes into existence Jan. 3 is a somewhat complicated and confusing one.

According to the Federal Communications Commission's recently upheld Second Computer Inquiry, which is due to be implemented on Jan. 3, new customer premises equipment such as private branch exchanges and telephones will become deregulated, with sales responsibility and AT&T's inventory being transferred to American Bell.

The Bell operating companies must stop leasing and selling new customer premises equipment, but may continue to lease or sell whatever remains in their current inventories. However, all newly manufactured Bell customer premises equipment must be offered by American Bell.

According to the terms of the modified final judgment in the AT&T antitrust case, the Bell operating companies and AT&T must be separated by Feb. 24, 1984. With Federal District Judge Harold Greene's approval, however, that separation will be made by Jan. 1, 1984, for planning, tax year and accounting purposes.

On that date, the Bell operating companies can resume marketing — but not manufacturing — customer premises equipment.

Corrections

The charges accusing Paul Magnuson and two others of stealing trade secrets from Magnuson Computer Systems, Inc. were filed by the Santa Clara, Calif., Sheriff's Office. Magnuson Computer did not file, nor does it intend to file, any charges on its own, as the *Computerworld* headline "Namesake Company Files Suit" incorrectly noted [CW, Dec. 13].

In a *Computerworld* Product Spotlight focusing on 16-bit desktop computers [CW, Oct. 11], CIE Systems, Inc.'s 680/10 computer was identified as having the firm's Versados operating system. Versados was discontinued as the system's standard software just prior to the article's publication. CIE now offers its Regulus operating system, as well as Unix System III and the Pro-IV application software processor with its 680/10, 20, 40 and recently introduced 680/30 systems.

Vector Graphic, Inc. ["Microcomputer Networking Packages Debut," CW, Dec. 6] is located at 500 N. Ventu Park Road, Thousand Oaks, Calif. 91320, not in Sunnyvale, Calif.

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Teleconferencing a Cure for Budget Blues?

By Bill Laberis
CW Staff

With the need to keep up with technology changes colliding against stringent DP budgets that have restricted conference and seminar travel, some observers feel the time may be right for an expansion of teleconferencing services.

But of 12 DP executives interviewed recently by *Computerworld* (story on Page 1), only one said his company has embraced a limited teleconferencing concept as a means of saving travel time and expense while keeping up with industry trends. Most of the others said their companies had investigated teleconferencing possibilities.

"I see teleconferencing as a good means of getting the information education job done," said Ralph Anderson, corporate information systems director at Wagner Electric Corp. of Parsippany, N.J. "Expensewise, I think it's a bit out of reach still for many companies."

The DP shop at PPG Industries, Inc. of Pittsburgh, Pa., has started using freeze-frame teleconferencing for work sessions emanating from corporate headquarters there and beaming out to plants and DP shops outside metropolitan Pittsburgh. A DP executive there called the concept "interesting, especially as it reduces costs for us."

Full-motion color teleconferencing is still prohibitively expensive, he added.

"I feel there's more potential in video presentations than most people might think," the PPG executive said. "Initially, you feel like you're losing a lot in the translation, but you get used to it."

Limited Value

On the other hand, H. Alfred Colby, senior vice-president of data processing at John Hancock Mutual Life Insurance Co. in Boston, sees "limited value" in teleconferencing for the continuing education of DPers. (DP operations at Hancock are highly centralized in Boston, Colby noted.) Teleconferencing may hold more significance for sales and marketing people than DPers, he said.

Meanwhile, companies and service agencies are expanding their teleconferencing offerings to meet what they hope is a growing demand for their wares.

Western Union Videoconferencing, Inc. of Upper Saddle River, N.J., and Communications Training Consultants, Inc. (CTC) of New York recently announced a joint program to train executives in the effective utilization of teleconferencing. The program will attempt to train executives to act as site facilitators at various teleconferencing nodes (down links) to where a meeting is beamed from a central location (up links), according to Deanna Morton, CTC's vice-president. CTC's staff includes specialists in behavioral psychology, communications sciences and electronics, Morton claimed.

The program will be directed at "helping executives get used to a different yet effective way of doing things in a changing business environment. CTC initially will concern itself with teleconferencing over dedicated networks," she said.

Boston-area business people can now avail themselves of Picturephone, an AT&T service. Using a combination of satellite and terrestrial facilities, this Bell system offering transmits sound and full-color, full-motion signals from a public room in the Boston suburb of Lexington to similarly equipped rooms in nine cities across the counrty.

Any room on the video teleconferencing network can communicate with any other room, allowing conferees to hold intercompany and intercity conferences.

AT&T plans to offer the service in 12 cities by year-end 1982 and in 42 locations by year-end 1983.

Boomstein Elected President Of New Teleconferencing Group

WASHINGTON, D.C. — A. David Boomstein, national teleconferencing project coordinator for Citibank N.A., has been elected president of the newly formed International Teleconferencing Association.

Other elected officers include Lorne Parker of the University of Wisconsin, vice-president; Elliott Gold of the Telespan Newsletter, treasurer; and J. Robert Brouse, executive director.

With 50 industry members, the association provides a clearinghouse for the exchange of information between users, researchers and providers in the teleconferencing field. It was formed to advocate and promote recognition, research and broader applications of teleconferencing systems and services, association officials said.

The International Teleconferencing Association can be reached through P.O. Box 3706, Tysons Corner Branch, McLean, Va. 22103.

MIS Execs Reading Instead of Traveling

(Continued from Page 1)

while still keeping up with change," he added. "For us, attending the shows has been expendable. I don't think it's mattered one way or the other."

Ten of the 12 managers randomly selected and interviewed indicated that their shops have either cut back on out-of-town conference and seminar travel or eliminated it altogether as a means of keeping informed. In many instances, conference travel is now confined to local shows, although several managers said DPers are free to travel out of town for conferences if they themselves are willing to foot the bill.

A majority of the managers interviewed said they now have a stronger interest in establishing a base of local industry contacts, including local user groups, vendors' marketing representatives and local trade organizations that host meetings to air common DP problems.

Spencer Barber, vice-president of information services at Gold Kist, Inc. in Atlanta, who reads "as much as I possibly can from the flood of trade journals," said, "I also participate in an IBM user organization here."

Asked about industry conferences and trade shows, Barber said, "They have limited value, in general. Many of the shows are just too big to get a handle on what's going on. Even without tight budgets, I doubt we'd attend them unless they're local."

As one means of furthering DP education during fiscally austere times, Barber suggested that managers hire industry experts to come to their DP shops to conduct special work sessions.

'Sort of Hope'

Jerry Comeau, vice-president of management support systems at Texas Commerce Bank in Dallas, said it has become increasingly difficult to justify the expense of conference attendance outside the metropolitan area. "We sort of hope we're not missing anything by staying home," Comeau said.

Keeping up with the times at the Commerce Bank involves continuous contact with a research marketing center at the bank's headquarters in Houston, which has led Comeau's office to make extensive use of teleconferencing as a substitute for face-to-face interaction.

Mel Kucher, DP manager at the Budd Co. of Philadelphia, reported that one year ago his department froze all conference and seminar travel until economic conditions improve. He admitted this action "has hurt."

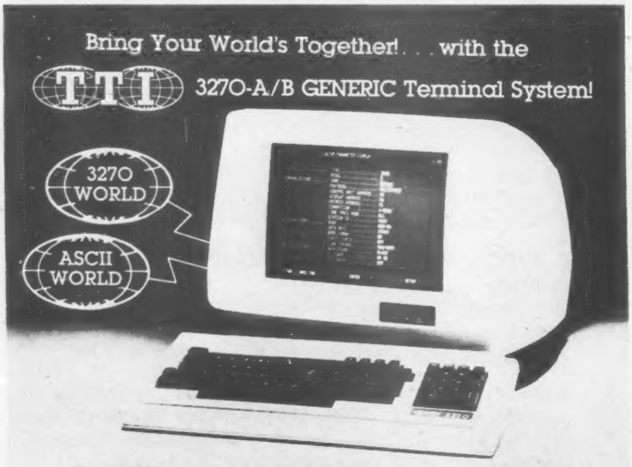
As a substitute, the company has allowed Kucher to purchase or lease in-house training cassettes with material similar to what is offered at trade show work sessions. Budd has not yet looked seriously at teleconferencing, but may do so when the economy picks up, Kucher added.

The primary source of continuing DP education cited by all the DP managers interviewed by *Computerworld* is the growing number of computer-related journals and periodicals. However, several complained that the volume of material far exceeds the time available to read it.

"There's a big problem of information overload . . . and I personally counsel against getting any more journals and new publications," said Jack Hancock, vice-president of corporate systems planning at Wells Fargo Bank in San Francisco. "This is an indication of just how fast things are changing in the computer field. You either let it happen or get educated and plan for it."

Hancock carefully sorts through the list of conferences and seminars, settling on about three he will attend per year. Wells Fargo also subscribes to the information journals and bulletins of two national computer industry think tanks.

"It's impossible for managers to know everything that's going on in the field, because there's just too much changing," echoed Harold Baer, MIS director at International Paper Co. in New York. "Just find out through your industry organizations what the competition is doing, and let the rest go. You can't know it all anymore."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Used Computer Dealers Find Themselves

Industry Spotlight

(Continued from Page 1)

produce a real "buyer's market," with dealers and lessors of used equipment scrambling to keep their businesses viable.

Some analysts feel the coming year could see a shakeout in the used computer market, with several dealers going belly-up as little institutional investment money filters into the dealers' realm [CW, Nov. 15] and as IBM becomes a more formidable contender in the leasing and used marketplace.

"It's always been an assertive and aggressive business," observed Charles C. Greco, manager of the leasing planning service at International Data Corp. (IDC), the Framingham, Mass.-based market research firm. "It may be getting worse, the way things are looking now. Nineteen eighty-two was a terrible year for the dealers."

Greco maintained that the dealers' "main competition" will be IBM. "They'll have to beat IBM first, then beat up on each other."

Dealers Less Pessimistic

Most dealers interviewed recently were not so pessimistic about the state of the used and leased equipment marketplace. They believe that investment money will return to the market in 1983 and that IBM will be just another competitor, albeit a potentially large one.

But one dealer, who asked not to be identified, claimed the market for non-IBM used equipment is in for "some minor earthquakes in 1983," especially since the formation of the IBM Credit Corp., which he called "an ominous threat . . . that could suck up practically the whole market if it wanted to."

Whether IBM will flex its ample muscle and wipe out the so-called third-party dealers is doubtful, most observers feel. The extent to which IBM Credit Corp. asserts itself in the used marketplace may well depend, ironically, on how well the other dealers perform. In other words, if the third-party market is healthy, IBM may continue to maintain the somewhat low profile it has maintained since the Credit Corp. allied with Merrill Lynch, Pierce, Fenner & Smith, Inc.'s financial might last July.

"If IBM [Credit Corp.] wants to, it can win nine out of 10 [used equipment] deals," said Edward Cherney, board chairman of the Computer Dealers and Lessors Association (CDLA) and president of CMI Corp., a Troy, Mich.-based used equipment dealer.

IBM's main business, however, is selling new machinery, and the third-party dealers collectively are IBM's biggest customer, Cherney pointed out. "I don't think IBM wants to ruin one of its best ways of getting new machines out the factory door," he said. "But if the third-party dealers fail, IBM will have no choice but to become a predominant force in the used and leasing markets, establishing a humongous credit corporation.

"I think for now the IBM Credit Corp. is a defensive move on their part, insurance against the worst happening in our business," Cherney pointed out.

The CDLA head knocked IBM's recent pricing policies, which he said have provoked tremendous uncertainty in the used market by making estimates of equipment residual values. IBM, he claimed, "has substantially undermined what people believe in residual values.

"The used [IBM] CPU you're trying to deal is like an aircraft carrier waiting for a Kamikaze attack, as far as its value goes. The only question

Used Computer Dealers Unruffled By IBM, Ups and Downs of User Demand

By Bill Laberis
CW Staff

The used computer market, which has weathered more than one storm in its 20-year history, is now facing an IBM-based onslaught with the same cavalier spirit that helped it grow over the past two decades.

The seeds of growth in the used market began to sprout in 1956 — years before the appearance of any viable dealers. It was then that the U.S. government began its antitrust proceedings against IBM, which until then had only rented and not sold its equipment.

Within a few years, a handful of used market pioneers began buying equipment from IBM and leasing machines on their own, offering more flexible terms to end users. For one thing, the dealers employed flat-rate leasing, competing head-on with IBM's CPU time-based rates. As computer use flourished, so did the so-called third-party or used business.

Leases Spawn Interest

The used dealers also began writing shorter term leases, increasing their attraction for end users. The shorter leases resulted in greater numbers of used machines returning to the market after lease expirations, spawning even greater interest in the used market.

The dealers grew more sophisticated, forming their own trade organizations, the Computer Dealers Association and the Computer Lessors Association, which would later merge to form the 175-member Computer Dealers and Lessors Association in 1981.

The numbers and prestige of used dealers grew significantly in the '60s and early '70s with the introduction of the IBM 360 and 370 CPUs, around which thousands of DP shops and multiuser systems were built.

Ironically, it was dealings in the 370 that caused one major scandal and another major bankruptcy in the used market, sending tremors through the market that are still being felt today:

- In March 1981, it was revealed that OPM Leasing Services, Inc. had written about 1,200 leases, mostly on 370s, at rates significantly lower than those of other dealers. The introduction of IBM's 4300 series had devastated the low-end 370 market, and OPM's lessees and institutions that financed the equipment stood to lose up to $250 million as a result of leases arranged with the company.

Even though many of the leases contained cancellation clauses, users were stuck with the 370s once OPM filed for protection under bankruptcy statutes.

- Itel Corp., another high flyer in the 370 lease and used equipment market, also saw its balloon burst with the 4300 announcements, casting further shadows on the used marketplace. Like OPM, Itel had written cancellation clauses into its leases, and its insurer, Lloyd's of London, lost heavily when users terminated the leases prematurely.

"Those cases are still affecting our market to some degree, such as in the ability to attract capital," said Kenneth N. Pontikes, president of Comdisco, Inc., a Rosemont, Ill., computer dealer.

"We are still overcoming the Itel and OPM wave," added Edward Cherney, president of CMI Corp., a dealership in Troy, Mich. "There are still some guys out there in the used market who represent residual equipment values that are far in excess of true values."

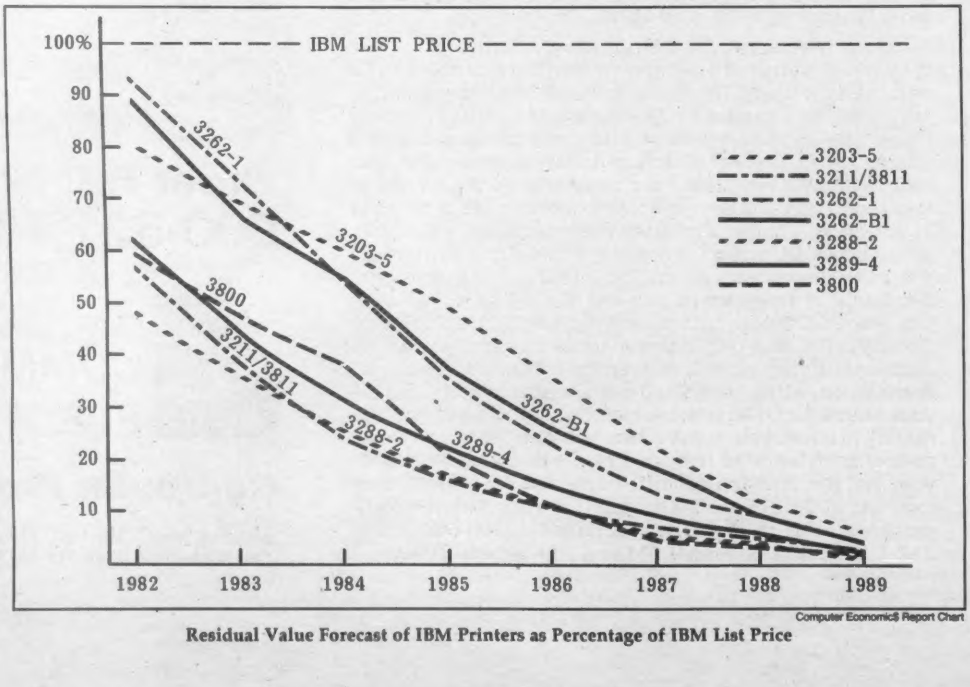
End Users Hesitant

One market analyst said the OPM and Itel matters "hurt the used market tremendously" and produced "a lot of hesitancy in end users to go to the third-party lessors."

Nonetheless, the used market for certain products remains hot, according to both dealers and analysts. Four out of five dealers contacted by *Computerworld* reported that used IBM 3033 processors are in strong demand, largely because of their price relevant to the 3080 series and because the 3033 can be field-upgraded to an attached processor.

According to Pontikes, the 4300 series computers are also hot items, particularly the 4341s.

Demand for used IBM printers, tape equipment and disk drives, including the 3350, was characterized as steady to good.



Computer Economic$ Report Chart

Residual Value Forecast of IBM Printers as Percentage of IBM List Price

Caught Between Recession, IBM Credit Corp.

Industry Spotlight

is, will it be IBM or the Japanese who cut off your legs?" Cherney posited.

Another dealer said that the price of new IBM equipment is placing profound downward pressure on used equipment, over 90% of which is IBM-made.

"Dealers have to face up to this reality," said George H. Heilborn, president of IPS Computer Marketing Corp. and president of the CDLA.

Both Heilborn and Cherney admitted their companies have lost some deals to IBM Credit Corp. in recent months, and they expect to lose more in the future.

The reason, one dealer explained, is that the gap between lease rates charged by dealers and the higher rates charged by IBM is closing as institutional investment money continues to shy away from the used marketplace. IBM Credit Corp.'s cash portfolio, meanwhile, will remain fat by virtue of its relationship with Merrill Lynch and its expansive financial resources.

IDC's Greco predicted that IBM Credit Corp. will become more flexible in writing leases and thus surface as a more aggressive used market competitor. IBM, Greco said, "wants badly to get out of the leasing business and turn its customers on to its Credit Corp. The proof is that it [IBM] keeps on raising rentals while dropping purchase prices.

"This means the leasing market will have another big competitor, whether the dealers like to think so or not," Greco continued. "And when the lease comes due, the Credit Corp. will produce an abundant flow of used equipment. This will have a tremendous impact on the used marketplace."

Greco speculated that the Credit Corp. might then strike a deal with a few large dealers to market used IBM machines on an exclusive basis.

Treasures or Fool's Gold?

By Bill Laberis
CW Staff

The used computer marketplace, both as it now exists and as it looms in future, offers treasures for the prudent and fool's gold for the unwary.

Like the used car market, you can drive away with the deal of a lifetime, especially in a buyer's market, or get stuck with a maintenance hog that at best performs half as well as the newer and possibly cheaper models.

"The worst thing a user can do is sit down with a used [equipment] dealer like some yokel off the street, not knowing what he wants or, for that matter, what he has to pay," warned one used computer market analyst. "Believe me, dealers are terrified of the educated user. When it comes time to fish or cut bait, they [the dealers] would like to be holding all the good cards while taking a good peek at yours."

What, then, are the advantages and pitfalls of the used vs. new market?

Certainly the most dynamic catalyst of change in the used market is the actions of IBM. Because more than 90% of the used equipment bears IBM's name, the pricing actions that IBM takes on production line equipment have obvious and profound effects on residual values of used equipment. And given that an excursion into the used market is very often prompted by financial considerations, users may find themselves second-guessing IBM in estimating the true value of used equipment, be it for lease or purchase.

Generally speaking, used dealers like to think they have three legs up on IBM: better pricing, faster delivery times and greater flexibility in writing leases. Bear in mind, however, that the term "used" as it applies to computer equipment means anything from hardware that has been completely reconditioned to equipment that has only been shined up a bit.

Price the Key

Basically it's price that sends most users to the used market, and no two used dealers will write the same deal in the same way. The System/34 announced by IBM in 1978, for example, is a relatively old machine, but one that can be had for 75% or less of its $50,000 list price, according to some used equipment dealers.

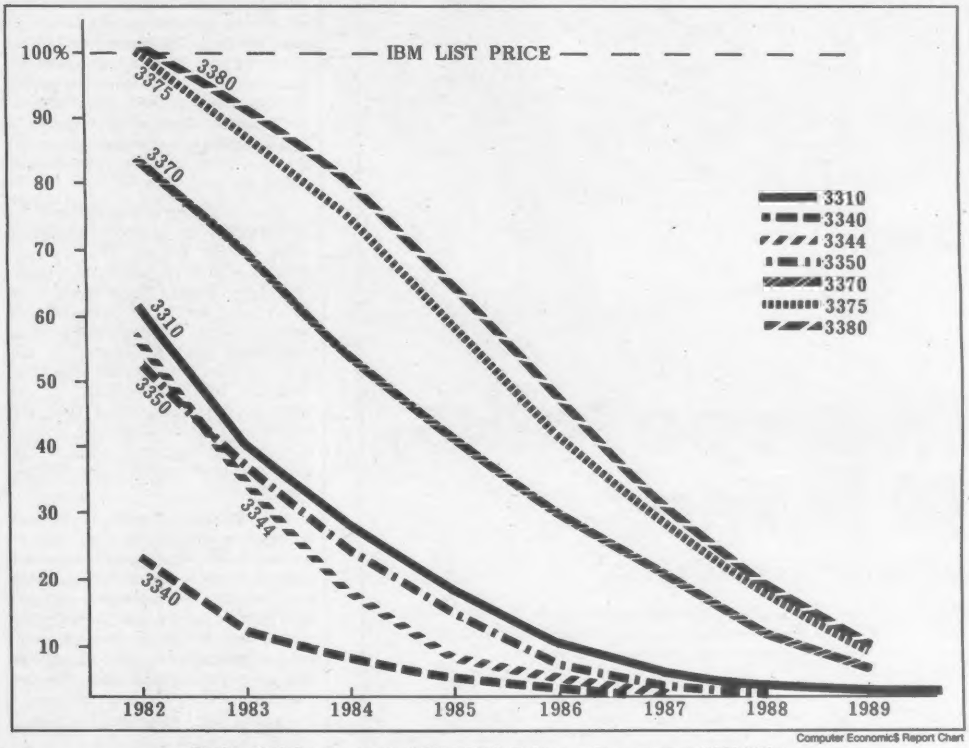
And a used 4331-1 processor, no longer in new production, sells in the used market for considerably less than the 4300 series computers that replaced it.

Used equipment has no list price, so what the end user pays depends on how and with whom he deals.

Residual values are also based on the availability and market strength of a particular processor. For instance, International Data Corp. noted in a recent issue of its *EDP Industry Report* that recent price cuts on IBM 4300 series computers "suggests the possibility that a replacement series for the 4300s may be on the way . . . It looks like the 4331 series is in most jeopardy." Thus, both users and dealers are left guessing about the 4300s' future residual values.

With survey after survey showing tighter DP budgets, the used market may appear even more alluring to cost-squeezed managers. But in probing the used market to save a buck, users must consider the cost of upgrading any used purchase, analysts caution. If a used purchase is based

(Continued on Page 12)



Computer Economic$ Report Chart

Residual Value Forecast of IBM Disk Drives as Percentage of IBM List

Model	Dec 1982	Dec 1983	Dec 1984	Dec 1985	Dec 1986	Dec 1987	Dec 1988	Dec 1989
3310-A2	61 %	40 %	28 %	19 %	10%	6 %	4 %	2 %
3340-A2	23	12	8	4	2	-	-	-
3344-B2	57	34	18	11	6	3	1	-
3350-A2	54	38	26	15	8	4	2	1
3370-A1	83	70	54	42	30	21	12	7
3375-A1	100	88	76	57	42	28	17	9
3380-A4	100	92	80	62	48	30	18	10
3830-2	27	14	7	3	-	-	-	-
3880-1	86	70	53	38	24	15	8	4
3880-B13	100	100	85	64	48	32	19	10

Computer Economic$ Report Chart

1983-1989 Projected Residual Values of IBM Disk Drives as Percentage of IBM List Price

Modern Santa Makes Appearance at Toy Store

By Susan Blakeney
CW Staff

NEW YORK — F.A.O. Schwarz has installed a computerized Kris Kringle at its flagship Fifth Avenue store to make Christmas dreams come true.

The toy store's microcomputer takes a child's name, sex, age and areas of interest and churns out a list of Christmas gift suggestions, their location in the store and respective price tags. According to store manager Frank DeFini, many holiday shoppers are making use of the QX-10 microcomputer from Epson America, Inc. to get some ideas of what to look for.

"It's a gimmick," he admitted, but "it's been very successful. Lots of people are using it — I think they just want to try pushing buttons on a computer."

Boosted Sales?

DeFini said it's impossible to tell if the computer system has boosted the store's sales — F.A.O. Schwarz's yuletide traffic runs at a rate of 10,000 to 15,000 customers every day — but it certainly hasn't hurt business. Both children and adults are reacting favorably to it.

The idea originally came not from the North Pole but from Epson, which installed the small system and printer for Schwarz on Nov. 30. With the help of the store's merchandising staff, Epson entered Schwarz's inventory of toys and games into the computer and provided the software program that makes the gift-matching possible.

Epson is providing its equipment free of charge to F.A.O. Schwarz as well as to several shopping malls around the country. Renate Steiner, public relations director for the Torrance, Calif., micro maker, said the computers, like Santa, will disappear after Christmas. However, because they have been so well received by the stores and the consumers alike, they may be back for Valentine's Day or Mother's Day.

Shopping of the Future

F.A.O. Schwarz store manager DeFini said the Epson system represents shopping of the future: "Instead of those massive catalogs that go out, people will be able to shop at home from personal computers, plug in their charge card numbers and addresses and the stuff will be delivered."

But what about the hustle and bustle of the Christmas rush?

"This might take a lot of the fun out of shopping," DeFini remarked.

Treasures Or Fool's Gold?

(Continued from Page 11)

around an aging technology, it may hold nothing other than scrap value when it is time to upgrade. Users who purchase used machines approaching the end of their planned life cycles are particularly vulnerable to this situation.

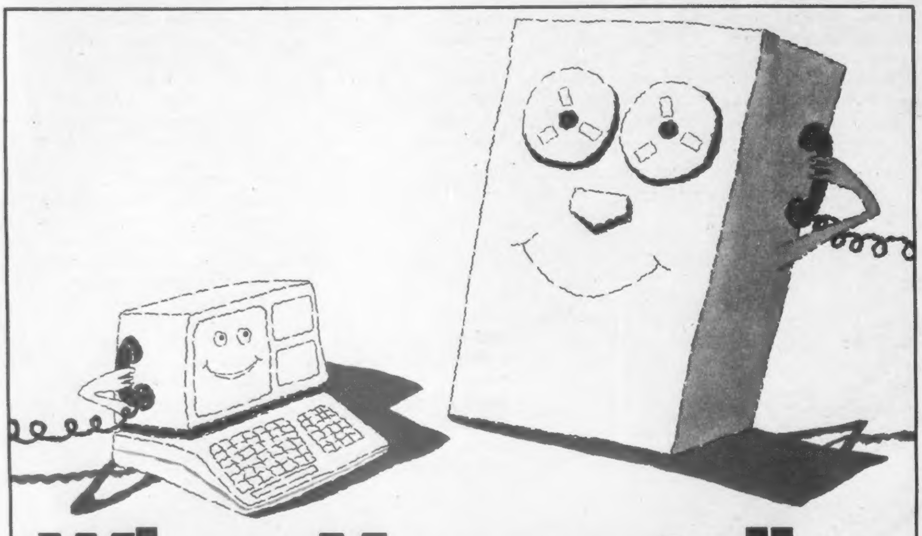
Additionally, maintenance costs on old machines can far outstrip that on new ones. And as with old cars, spare parts for old computers and peripherals can be hard to come by, as are the service people who can work on them. But the used market is often the only place where users can find machines no longer supported by the manufacturer. Ideally, analysts advise, users should garner a vendor maintenance contract to go along with a used equipment purchase.

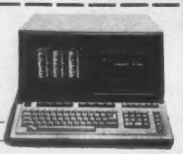
Used computer and peripheral deliveries often try to shave a month or more off the typical IBM delivery time as a further competitive edge. Here again the shorter delivery time may or may not be instrumental to a user, although dealers claim they will bend over backwards to cut down on lead time. But the time span between IBM's announcement of some products and when they are available in quantity can be several months, driving many users to the used market in search of the alternatives there.

Also, dealers formerly had something of a monopoly on flexibility in writing leases. IBM, however, has recently introduced more flexible lease plans and thus become more competitive in the used market. Industry observers feel this has generally resulted in stepping-up dealer competition and its attendant price benefits for the end user.

Most dealers of large used equipment offer users several ways of arranging a transaction, including purchase and leaseback, whereby the dealer buys the user's equipment and leases it back to the user; rentals, usually arranged over the short term and inclusive of insurance and maintenance; leasing, written for a minimum of one year, generally; or a delayed payment sale, whereby payment is made at a mutually arranged time after equipment delivery.

Whatever the financial arrangement worked out, the equipment when finally delivered can provide the user with unforeseen advantages. For one thing, any bugs in the system or peripheral should have been worked out long before the used machine has been installed.





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Western Union Awaiting Teletex Service OK

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — Western Union Telegraph Co. officials last week were awaiting clearance from the Federal Communications Commission (FCC) to offer the nation's first teletex service. However, an FCC spokesman said that action is not likely until next month at the earliest.

The new service would permit transmission of messages at high speed among communicating word processors located in 25 U.S. cities. Transmission to and from West Germany is also included, as well as transmission between teletex and telex terminals.

Two pricing options for domestic service are proposed in a tariff Western Union filed late last month. Option I provides a nonrecurring $200 charge for each termination, a $300/mo charge for each access port and a usage charge of 35 cent/page. Option II is the same but exempts the user from usage charges; however, the port charge is $500/mo.

For calls to teletex subscribers in West Germany, usage charges would apply under both of the above options. The Option I charge would be 84 cent/page; for Option II customers it would be 49 cent/page.

Teletex-telex rates are 35 cent/page plus the domestic telex usage charge under Option I; only the telex fee is charged under Option II. For international calls involving a teletex subscriber in the U.S. and a telex subscriber in West Germany, Option I customers would pay 35 cent/page plus the international telex rate, while Option II customers would pay only the latter.

Users would connect with Western Union's teletex switching center in New York through conditioned private lines using word processing terminals that conform with international teletex standards. When the service goes on the air, according to Western Union, it will interconnect all of the larger cities within the interior of the country.

Teletex, at 2,400 bit/sec, transmits a message nearly 50 times faster than telex. Teletex also offers a larger keyboard, better error control and the replacement of the telex message with a more readable letter format.

Mitre Offering List of DP Jobs Via At-Home Dial-Up Service

BEDFORD, Mass. — Some call it an innovation, some call it a gimmick, but after less than two weeks, more than 2,000 New England DPers have called it a possibility.

Since Dec. 5, Mitre Corp. here has been offering a listing of DP-related jobs through a dial-up system for owners of personal computers.

All you need is a terminal, 300 or 1,200 bit/sec modem and a phone to get a list of jobs open at Mitre, Mitre benefits and a statement of Mitre's history and direction. If you see a job you like, all you have to do is enter your name, address and phone number and Mitre will get back to you.

Claiming it is one of the first such programs in the country, Mitre spokesman Carleton Smith said that the recently initiated program is expected to draw just the kind of people Mitre wants — those with strong DP backgrounds who like to play around with computers on the side.

So far, response to the idea has been strong. Mitre ran a newspaper ad Sunday Dec. 5, announcing the service and had 225 inquiries about the job program the first day. Since then, about 2,000 people have called the system, Smith said.

Mitre is thinking of expanding the service nationwide, but it will not drop other forms of recruitment, such as newspaper ads, Smith said.

Professional recruiters call the Mitre project a cute gimmick. Herb Halbrecht, president of the Stamford, Conn.-based recruitment firm of Herb Halbrecht and Associates, said the idea is reminiscent of a program offered by Western Union Telegraph Co. about 15 years ago which allowed job seekers to list their credentials on a national data base.

Noting that everyone is using a computer these days, Halbrecht said that how a system scans applicants and cross-references qualifications is more important than simply offering a listing of jobs.

Another professional recruiter, who asked not to be named, said computers cannot replace the personal touch offered by recruiters.

"I used to be afraid of these things years ago," Halbrecht said, but there's more to recruitment than just amassing a list of names.

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CW 12

AT&T Willing to Try Wats/MTS Integration

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — The Federal Communications Commission (FCC) has been asking AT&T to justify the differences between Wide Area Telecommunications Service (Wats) and Message Toll Service (MTS) long-distance rates — for about 20 years. Earlier this month AT&T expressed a tentative, limited willingness to integrate the two services.

The FCC began its latest Wats investigation, officially titled Docket 80-765, in April. AT&T has been asked, among other things, to justify the "tapered" rate schedule in the present Wats tariff.

The tapered rate allows the user to pay successively lower hourly rates as monthly usage increases. The highest rate is charged for each of the first 15 hours' usage per month and the lowest for each hour above 220 or 240 hours per month, depending on whether the service is Outward Wats or In-Wats (800 numbers). Auto rental firms, hotel/motel chains, on-line DP service bureaus and other volume users of Wats have been in the forefront of those opposed to changing the tariff. MCI Telecommunications Corp. and other specialized carriers, which see a business opportunity if Wats rates are increased, are in the FCC's corner.

"Despite the demonstrated reasonableness of the present separate and distinct Wats offerings, AT&T is interested in exploring innovations which could lead to a [public switched network] tariff responsive to the needs of both the MTS and Wats markets," Bell told the commission in a Dec. 7 statement. "Such a tariff, while recognizing the differences in the services, would provide rate continuity as usage increases."

However, there were two major qualifications in AT&T's offer:

- "Because of the unique way 800 service is provided and billed, it would be undesirable and impractical to bring it into such a tariff," the company said.
- Secondly, such a tariff would require extensive analysis. Furthermore, "It is essential to have separations reform accomplished, access charges in place and to complete divestiture of the Bell operating companies before detailed evaluation of public switched network tariff proposals begins," Bell said.

AT&T Refiles TDC Tariff

WASHINGTON, D.C. — AT&T has submitted a revised Terrestrial Digital Circuits (TDC) service tariff, carrying a March 3 effective date, to the Federal Communications Commission (FCC). The revised tariff appears to satisfy one objection leveled at the earlier version, but ignores some others.

TDC, a two-point dedicated digital private-line service, is a replacement for the existing 1.544M bit/sec Dataphone Digital Service. Among its likely users is American Bell, Inc., the unregulated subsidiary AT&T recently formed to offer new-generation "computer communications" services.

The TDC tariff originally charged $580/mo for a local-access channel between a customer's premises and a Bell central office, but $1,030/mo for the same channel if it connected the customer's premises with a competing specialized carrier's network node. In the revised tariff, this differential has been eliminated; the new rate, in both cases, is $450/mo.

But the revised tariff, like the original one, requires the customer to use Network Circuit Terminating Equipment obtainable only from AT&T. "Although such equipment is . . . capable of being provided by independent manufacturers, AT&T regards it as being somehow exempt from the commission's procompetitive policies," said the Independent Data Communications Manufacturers Association (IDCMA), a modem manufacturers' trade association, in a statement to the FCC last July.

The revised TDC tariff also says that all terminals connected to the TDC network after Jan. 1, 1984 must support an AT&T-developed "extended framing format." IDCMA argued that the phone company has not provided all the information independent manufacturers need to adapt their equipment to the new formatting scheme.

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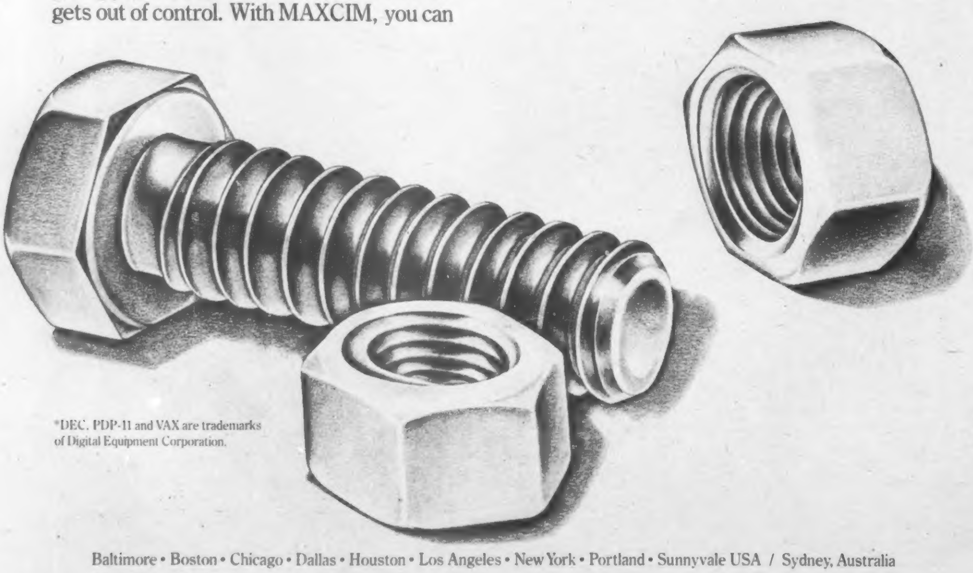

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Foreign Exchange Service To Remain Under FCC

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — Intrastate facilities that carry interstate communications will remain under the jurisdiction of the Federal Communications Commission (FCC), the commission ruled earlier this month. The FCC action culminated a chain of events that began in 1980, when New York Telephone Co. imposed a hefty surcharge on interstate foreign exchange service.

The foreign exchange service allows a user in one state to access the local exchange network in another state through a leased private line. The user pays a local charge rather than a toll charge; in return, users in the distant exchange can call the subscriber without paying a toll charge.

The FCC ruled that the New York tariff was discriminatory. California then levied an equal surcharge on intrastate and interstate foreign exchange users, arguing that it was neither discriminatory nor excessive. However, the FCC refused to rely on such assurances and insisted that it must have formal tariff filings. The commission's latest action specifically rejected California's assertion that there is no need for the FCC to continue regulating the local extensions of interstate services.

RCA Customers' Refunds Deferred Indefinitely

WASHINGTON, D.C. — Refunds of $25 million in overcharges to international telex and leased line customers by RCA Global Communications, Inc. (RCA Globcom) will be deferred indefinitely, the FCC ruled earlier this month. The commission action will give the Department of Defense (DOD) more time to pursue a court appeal.

DOD, a major user of RCA leased-line services, wants international leased line subscribers to receive a bigger share of the refund. As things stand now, it will receive 40% of the $25 million; international telex users will get 60%.

Earlier, the other three U.S. international record carriers (IRC) — Western Union International, Inc., ITT World Communications, Inc. and TRT Telecommunications, Inc. — together with AT&T, paid back approximately $125 million to their international customers. The repayments resulted from a 1975 FCC decision that found that Communications Satellite Corp. (Comsat) was charging the phone company and the IRCs too much for the leasing of satellite circuits. The Comsat rates were not lowered until 1979, however.

Supreme Court Asked To Review AT&T Ruling

WASHINGTON, D.C. — Fourteen states have asked the U.S. Supreme Court to review the recent settlement of the government's antitrust case against AT&T. Tandy Corp. and the North American Telecommunications Association (Nata) are also seeking review.

The settlement, officially referred to as the Modified Final Judgment, was worked out initially by lawyers for AT&T and the Justice Department. It was accepted last August by U.S. District Court Judge Harold H. Greene, who presided at the trial, after he persuaded the government and the phone company to make a number of changes.

"The question is ... whether a federal court, acting pursuant to jurisdiction conferred by the Sherman Act, may enter a decree that commands parties to ignore or violate valid state law," said a joint petition signed by 13 of the states.

Nata, a trade association representing independent manufacturers of private branch exchanges, telephone and related terminal equipment, is unhappy with Greene's decision allowing the Bell operating companies to market terminal equipment after divestiture. The original settlement barred them from this market.

Tandy opposes abrogation of the mandatory patent licensing provisions AT&T agreed to in 1956, when it signed a consent decree ending an earlier government antitrust case against the phone company. The Modified Final Judgment accepted by Judge Greene last August replaces the 1956 consent decree.

House Approves Tech Resolution

WASHINGTON, D.C. — The House of Representatives has joined the Senate in approving a resolution noting the "vital" U.S. need to advance science and technology in electronics and communications.

The resolution, passed earlier this month by the Senate [CW, Dec. 13], expresses "the sense of the Congress" that the U.S. must protect its dwindling superiority in the areas of electronics and communications. The measure commits Congress to support actively these two areas of science and technology and to urge their support by private and corporate organizations.

The resolution also gives congressional support to, but provides no funds for, the establishment of a national center dedicated to the advancement of communications and electronics technology. The center, financed by private funds, will be built in Georgia.

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Part Number	Description	Regular Price	Sale Price	% Off
SYSTEMS				
11/03-EA	KD11-F 3.5" Box (8 KB) 120V	$ 2,600	$ 1,500	42.3
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
8A620-BP	PDP8E, Proc, 16K Mem, Opt #2 120/60	7,700	4,500	41.5
8A625-AA	PDP8E Proc, Opt #2 120/60	6,450	2,570	60.1
8A625-AB	PDP8E Proc, Opt #2 240/50	6,450	2,570	60.1
VT278-GJ	Dutch DECmate W/Comm Option	3,900	2,000	48.7
DISKS				
RL01-A	Disk Drive (w/o Disk Pack)	3,000	2,000	33.3
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
RM03-C	RM03 Dual Access Kit	2,150	500	76.7
RM80-C	RM80 Dual Access Kit	2,150	500	76.7
RP06-U	RP05 to RP06 Upgrade Kit	10,500	3,300	68.5
RX8-AA	256KB Single Disk & Cont.	3,600	1,200	66.7
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TAPES				
TS03-SA	Slave 800 BPI Mag Tape Unit 120/60	5,000	3,700	26.
TU58-EB	Table Top TU58-Univ PWR W/EXR	1,750	650	62.8
TU58-VA	Dual Drive Mini-Cartridge Tape Drive	1,500	650	56.6
TU58-XC	Module W/Parallel Inf	400	200	50.
TU77-AJ	125 IPS NRZI, PE Magtape Drive 240/50	23,800	14,000	41.1
MEMORY				
MJ11-BE	64KW 11/70 Mem	19,500	6,000	69.2
MJ11-BM	32K x 18 Mem	4,900	2,500	48.9
MJ11-BY	64K x 18 Mem, Cont, PS	15,000	7,000	53.3
MK11-BE	64 KW MOS 11/70 Mem Exp.	17,200	1,700	90.1
ML11-AY	1 MB, Block Mode Mem, Cont, PS	20,000	9,000	55.
MM11-DP	16K Core Mem 11/04, 34	5,750	1,200	79.1
MM11-U	16K Sen Mem Board Only	4,950	1,000	79.7
MM11-YP	32K Core Mem 11/04-34	6,300	1,750	72.2
MR78-BD	1K x 8 WP Rom & Mem	728	300	58.7
MRV11-AA	PROM/ROM Mem Unit	210	100	52.3
MRV11-BA	PROM Mem Unit	390	200	48.7
MS8-CB	32K x 12 Mem (4K RAM)	3,850	900	76.6
MS8-DJ	128K x 12 Mem (16K RAM)	6,420	500	92.2
MS11-FP	8K MOS Mem 11/04-34	1,700	200	88.2
MS11-JP	16K MOS Mem, 11/04, 34	3,450	250	92.7
MS11-KE	32KW MOS/ECC Array Card	6,095	750	87.6
MS11-LB	128KB MOS Mem, 11/34A, 11/24	1,190	1,000	15.9
MS11-LD	256KB Mem, 11/34A	1,700	1,250	26.4
MS11-MB	256KB ECC Mem	2,500	1,850	26.
MSV11-CD	16K MOS RAM Memory for 11/03	1,375	200	85.
MSV11-DA	4K x 16 Bit MOS RAM for LSI11	780	150	80.8
MSV11-DB	8K x 16 RAM Memory for LSI11	910	175	80.7
MSV11-ED	32K x 18 RAM Memory for LSI11	600	300	50.
COMMUNICATIONS				
DH11-AC	16 Chan ASYNC MPXR 240V	8,800	4,400	50.
DL11-W	DL11A-DL11D W/KW11-L	770	450	41.5
DM11-DB	4 Line EIA Adapter	1,790	1,000	44.1
DMC11-MA	Network Link 1mB Local LV	3,500	1,500	57.1
DMC11-MD	Network Link 56KB Local LV	2,500	1,500	40.
DUP11-DA	SYNC INTERF SDLC/DDCMP/BISYNC	1,575	1,000	36.5
DV11-AA	SYNC/ASYNC Multiplexor	6,970	2,400	65.5
DV11-BB	Line ASYNC Group	4,800	1,500	68.7
KL8-A	4 Chan ASYNC Cont.	1,300	390	70.
PRINTERS				
LA12X-BL	LA120 Numeric Pad	90	50	44.4
LA12X-SL	European Char Key Caps & ROM	140	50	64.2
LA36-CE	KSR Pntr + 20MA + Num Pad 60HZ	2,970	495	83.3
LA36-CJ	LA36-CE, 240V, 50HZ	2,970	495	83.3
LA36-HE	LA36-CE, 120V, 60HZ, EIA	3,080	495	83.9
LA36-HJ	LA36-CJ, 240V, 50HZ, EIA	3,080	495	83.9
LA180-PA	180 CPS R.O. Printer, Parallel 120/60	3,795	700	81.5
LAX34-KL	Key Pad—LA34/38	80	50	37.5
LAXX-KK	14 Key Pad/LA 35, 36	120	25	79.1
LAXX-LB	Opt. Mount Kit, LA35, 36	130	90	30.7
PRINTERS				
LAXX-NW	Buffered EIA Int, LA180	605	200	66.9
LP11-VA	132 Col Ptr, 96 Char 120/60	16,400	6,500	60.3
LP11-WA	230 LPM Printer 120/60	19,500	7,000	64.1
LQP8-ED	Ltr Qual Printer PDP8 240/50	4,800	3,000	37.5
VIDEO				
VTXX-KA	VT52 Int. to LA36, LA180	260	100	61.5
VT100-WB	DKBD W/AVO & Word Proc. KBD 240	2,140	1,500	29.9
VT100-WC	VT100-AA W/AVO & Word Proc FR CDN. 120V	2,140	1,500	29.9
VT100-WF	VT100-AB, AVO, WP & FR KYBD 240V	2,140	1,500	29.9
VT100-WH	VT100-AB, AVO, WP & Dutch KYBD 240V	2,140	1,500	29.9
VT100-WK	VT100-AB, AVO, WP & German kbd 240V	2,140	1,500	29.9
VT110-AA	VT100 W/DPM01 MOD Set 120V	6,325	2,500	60.4
VT110-AB	VT100 W/DPM01 MOD Set 240V	6,320	2,500	60.4
EXPANSION HARDWARE				
BA11-LE	5¼ In. 2 Sys Unit Exp 120V	2,700	1,700	37.
BA11-ME	3½ In. 4 Slot Exp. Box 120V	1,300	900	30.7
BB11-A	Bus Inf. W/18 Unwired SL	294	150	48.9
BB11-B	Double Sys Unit-Bus Inf	415	200	51.8
MISCELLANEOUS				
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
ATR16-00	Thermo Cple Temp. Ref Pan-16CH	531	300	43.5
DKC8-AA	PDP8A Opt BD #1	790	300	62.
DPM23-A	DPM (KDF11-AA, MSV11-DD, ISV11-B, BA11-NC)	10,370	3,000	71.
DR8-ED	Omnibus 2-Word Interface	478	200	58.1
DR11-L	2 Word Unibus Interface	514	250	51.3
DR11-M	2 Word Output Unibus	519	250	51.8
DR780-AA	DMA Channel, VAX 11/780 120V	18,700	8,500	54.5
DR780-AB	DMA Channel, VAX 11/780 240V	18,700	8,500	54.5
H978-AC	DECSTN Desk, 120V	670	350	47.7
IAC-IA	AC Sense—No Converters	350	250	28.5
IAC-IB	AC Interrupt—No Converters	370	250	32.4
IAC-OA	AC Driver-No Converters	390	275	29.4
IAD-OA	4 Channel D/A Conv.	1,100	500	54.5
ICJ-IA	Jumper	25	22	12.
ICR11-AA	Remote File Box 120V/60	6,695	2,500	62.6
ICR11-AB	Remote File Box 240/50	6,695	2,500	62.6
ICS11-MA	ICS File Box For PDP11 120/60	3,845	1,500	60.9
IDC-IB	DC Interrupt—ISOL	390	200	48.7
IDC-IC	I/O Counter	310	175	43.5
IDC-ID	DC Sense—Non Isol	200	130	35.
IDC-IE	DC Interrupt—Non Isol	240	130	45.8
IDC-OB	DC Single-Shot Output	350	250	28.5
IRL-OA	Latching Relay Output	710	250	64.7
IRL-OB	Flip-Flop Relay Output	740	200	72.9
ISH-IA	Analog Shield	65	60	7.6
KC8-AA	8A Programmers Console	885	495	44.
KK8-A	Spare 8A CPU Board	1,190	600	49.5
KT8-AA	8A Mem Mgt (Fact Inst)	2,270	1,135	50.
MR11-EA	Config. Unibus Boot, ROM Pkg	1,050	250	76.1
VK170-CA	Video Kit, M7142	475	350	26.3

digital

Assert Yourselves, Communications DPers Told

By Bruce Hoard
CW Staff

NEW ORLEANS — Communications professionals must take a more aggressive role in shaping policy at their companies because of the technological and regulatory changes occurring in the communications industry, James D. Posner said here recently.

Speaking at the Third National Symposium on Office Automation sponsored by the Data Processing Management Association's Education Foundation, the executive vice-president of Comsul, Ltd. warned users against relying on one vendor — the telephone company — for formulating communications networks and policies.

"We're living in very exciting times and those times require a great deal of knowledge," Posner said. "We're going to have to be expert in all phases of our jobs."

Talking about facilities design, he said communications managers must look for both flexibility and low costs. Gone are the days when network architects received a blank check.

Single-cable networks are alive and more viable than ever, Posner added, noting that the achievable data rates over twisted-pair and copper cable have climbed dramatically. "The idea of using twisted-pair cable will be viable for many years to come," Posner said.

He repeatedly warned users against relying on vendors, saying, "You're going to have to know how to protect yourself because the people out there aren't going to do it for you."

In the area of needs assessment, Posner said factors to be considered include station design work, class of service, what kind of equipment is needed and how it will be plugged into the wall. He added it is better to add to a network than remove from it because people feel as though their status is being downgraded if they have things taken away from them.

Traffic engineering and measuring is becoming very sophisticated and includes such things as looking at the kinds of lines that are needed, Posner observed. He mentioned flat-rate trunks vs. measured-rate trunks. He said that flat-rate trunk lines are considerably less expensive in California than in other parts of the country. When data is added to voice lines, it is "very, very critical" to understand how many messages are being sent and their average length, he said.

Posner said politics plays an important role in communications-related decisions. Communications managers should be aware of who are allies within their companies and where there will be resistance to change.

Systems design used to be a simple process that involved going to the telephone company and telling it what needs existed, he explained. The changing marketplace and proliferation of vendors now makes it incumbent upon communications professionals to research the market carefully before making any important decisions.

Network design is one area where AT&T can still be relied on, at least to a certain extent, because its Long Lines network has been left intact by the U.S. vs. AT&T settlement agreement, Posner said. But it is still wise to consider other common carriers and the possibility of building proprietary networks or using satellite links.

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Choice #2, $495* — the newest addition to the UDS family of line-powered modems is the 212LP. It is Bell 212-compatible at 1200 bps only (many applications never utilize the 300 bps channel), is certified for direct connection to the dial-up network and requires no AC power connection. Operating energy is derived entirely from the telephone circuit.

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Tree Stock Grows Lusher With Help of Mini

PORTLAND, Ore. — You may not find a computer under your Christmas tree, but you'll be happy to know that a computer may have helped grow it.

The Industrial Forestry Association (IFA) here, a nonprofit cooperative producer of tree stock for forest products companies, recently installed a small business system to handle payroll and general accounting applications. But in addition to the standard DP functions, the IFA is also using the Sperry Univac System 80 Model 3 with 1M byte of main memory to keep track of about 42 million seedlings scattered throughout the Douglas fir region of western Oregon and Washington.

The IFA grows the trees for about 50 wood processing firms that need seedlings for reforestation projects. The IFA grows eight different species of trees with growth spans ranging from one to three years.

"Our aim is to build a comprehensive, integrated group of special computer applications with the System 80, which will allow us to do a variety of management support, monitoring and control tasks," said Wallace W. Carey, director of private forestry at the IFA. "These will range from tallying raw counts of seedlings to complex cost accounting for individual seedling lots."

With more than 660 acres of nursery production land and nearly 350 employees, the IFA uses the System 80 to deliver more timely information to support management decisions.

"Growing trees is both a science and an art. The computer system will permit us to rely less on educated guesses and more on easily available, pertinent quantitative data. Our managers and supervisors will be able to make the best possible decisions on the allocation of their workers, the management of time and the harvesting and delivery of the product," Carey said.

The system is installed at the IFA's Portland headquarters and is equipped with a tape drive, line printer, communications workstations and four CRT terminals.

Directory Out For Mini Users

FORT COLLINS, Colo. — Imprint Software has released the "International Software Directory Volume 2: Minicomputers," a companion volume to the company's directory of microcomputers.

The volume reportedly contains information on over 3,000 packages for minicomputers. Each program is cross-indexed by subject, computer, operating system, language, vendor, price and International Standard Program Number.

The publisher also offers backup services for the directory including on-demand searches over the telephone.

The minicomputer volume costs $69.95 from Imprint at 1520 S. College Ave., Fort Collins, Colo. 80524.

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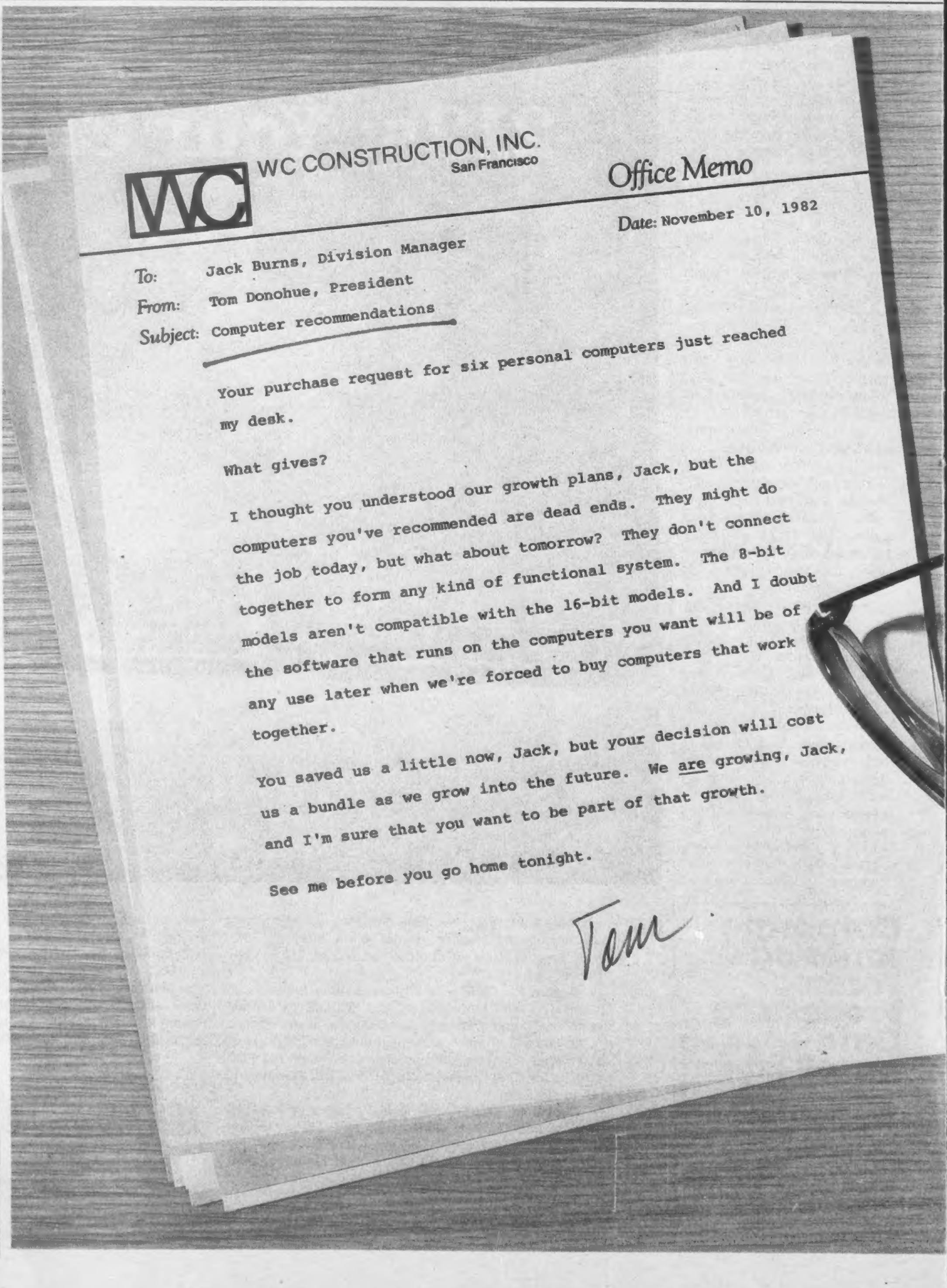

WC CONSTRUCTION, INC.
San Francisco
Office Memo

Date: November 10, 1982

To: Jack Burns, Division Manager
From: Tom Donohue, President
Subject: Computer recommendations

Your purchase request for six personal computers just reached my desk.

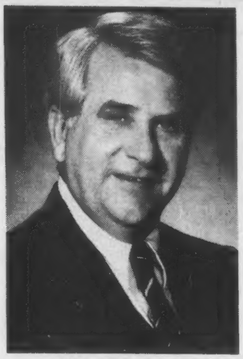
What gives?

I thought you understood our growth plans, Jack, but the computers you've recommended are dead ends. They might do the job today, but what about tomorrow? They don't connect together to form any kind of functional system. The 8-bit models aren't compatible with the 16-bit models. And I doubt the software that runs on the computers you want will be of any use later when we're forced to buy computers that work together.

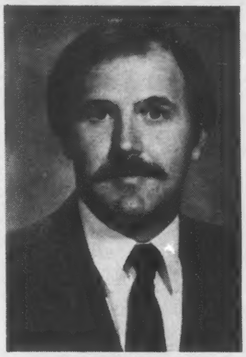
You saved us a little now, Jack, but your decision will cost us a bundle as we grow into the future. We are growing, Jack, and I'm sure that you want to be part of that growth.

See me before you go home tonight.

Tom



George T. Fugere



Kenneth Ray Cole

Managers on the Move

GEORGE T. FUGERE has been elected vice-president of information services for Bethlehem Steel Corp. in Bethlehem, Pa. He will head a newly formed department responsible for providing all systems development and data processing services for the corporation.

Fugere joined Bethlehem Steel as a member of the 1957 Loop management training program and later that year was assigned to orders and schedules in the corporation's sales department. He was named assistant supervisor of bars and tool steel scheduling in 1960.

The following year he was appointed assistant supervisor of rod and wire scheduling at the firm.

Two year later, Fugere was advanced to assistant supervisor of the Order Division for administration and scheduling.

In 1964, he was promoted to superintendent of the Production Scheduling Department at the Burns Harbor plant.

Ten years later, he returned to the home office and was promoted to assistant manager, production scheduling. He was named to the position of general manager, Systems Development Division, Accounting Department, in December 1979.

Fugere holds a B.S. degree in industrial management from the University of Rhode Island.

• • •

KENNETH RAY COLE has been promoted to director of data processing for Century Telephone Enterprises, Inc. (CTE), headquartered in Monroe, La. He will be responsible for data centers in Marion, La., and La Crosse, Wis., and all corporate data processing.

Previously, Cole served as general manager and president of Midwest Computer Services, a CTE subsidiary. Cole began his career with CTE in 1974 as program manager for Monroe Computer Services.

Cole attended Northeast Louisiana University.

• • •

KENNETH A. BERLIN has been promoted to vice-president of data processing for the brokerage firm of Folger Nolan Fleming & Douglas in Washington, D.C.

Berlin has been with the brokerage firm since April 1978 and is responsible for all facets of the data processing function.

Before joining the firm, he was a programming supervisor for the American Geophysical Union.

Prior to that he was a programmer and operations manager with the International Painters Union for six years.

Berlin holds an A.A. degree in general education from Montgomery College in Rockville, Md.

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Cape to Offer Communications Seminars

ORANGE, Calif. — The Center for Advanced Professional Education, Inc. (Cape) will offer two series of three-day seminars on data communications and networking beginning next month.

"Network Communications Protocols" will cover such topics as bit-oriented protocols, local-area networks, packet switch networks and satellite communications. Little expertise in the subject area is required, a spokesman said, as the course reviews major communications standards and the concepts underlying link operation and error recovery.

Locations and dates of the network protocol seminar are as follows: Seattle, Jan. 5-7; Columbus, Ohio, Jan. 12-14; Detroit, Jan. 19-21; New York, Jan. 26-28; Chicago, Jan. 31-Feb. 2; and Anaheim, Calif., Feb. 9-11.

The center also will offer a seminar entitled "Data Communications Systems — A Practical Guide." Topics to be covered include carriers and regulations, media, network elements, modems and modulation, modes of operation, codes, interfaces, protocols, message format requirements, hardware, transmission integrity, network transaction and application types, system design considerations, synchronous vs. asynchronous communications and operational alternatives for users.

Locations and dates for that seminar are Hasbrouck Heights, N.J., Jan. 5-7; Indianapolis, Jan. 12-14; Scottsdale, Ariz., Jan. 19-21; Houston, Jan. 26-28; Orlando, Fla., Feb. 2-4; and Boston, Feb. 9-11.

The registration fee for either seminar is $595, according to Cape, located at 11928 N. Earlham, Orange, Calif. 92669.

Software AG To Hold User Meet June 5-9

RESTON, Va. — Software AG of North America, Inc. will hold its 12th annual International Users' Conference June 5-9 in New Orleans.

The conference will feature guest speakers, user presentations, workshops and tutorials designed for all levels of the company's product users. It also will include product change/enhancement sessions and presentations on product status and future goals.

The keynote speaker will be Charles P. Lecht, chairman of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications systems technologies and author of *The Waves of Change — a Techno-Economic Analysis of the Data Processing Industry.* He will discuss future trends in hardware and software in "The Technology Vector" at the conference.

Other scheduled speakers are Ronald Ross, editor of the "Data Base Newsletter"; Ulric Weil, principal in data processing at Morgan Stanley, Inc. and author of *Information Systems in the '80s;* and William Perry, executive director of the Quality Assurance Institute.

The conference will be held at the New Orleans Fairmont and Royal Sonesta Hotels and will feature a companion program for spouses and an optional post-conference trip to Cancun, Mexico.

Further information about registration can be obtained from Software AG of North America, Inc., 11800 Sunrise Valley Drive, Reston, Va. 22091.

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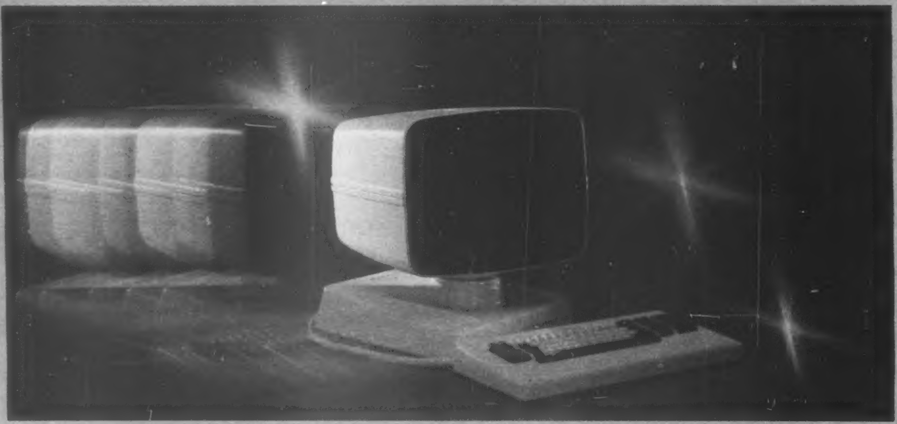

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☐ Four 3278 compatible screen sizes in a single All-In-One display: 24, 32 and 43 lines by 80 columns and 27 by 132.
☐ Unsurpassed character clarity with no flicker achieved with a screen refresh rate of 60 times per second, twice that of similar displays.
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☐ Special treatment achieves non-glare and fingerprint-resistant screen, enhancing character readability.
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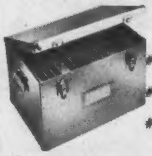

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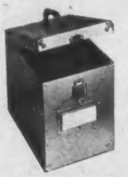
#5126 1 to 14 Thinline
#5127 1 to 18 Tapeseal



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Call for Papers

AUSTRALIAN COMPUTER CONFERENCE '83, Melbourne, Australia, Sept. 12-15.

Papers are being solicited on the trials, tribulations and triumphs of the manufacture of hardware and software; the application of computers in government, commerce, small business, education and industry; managerial aspects of computing; new concepts in computing, academic computing; and the development and application of graphics systems.

An abstract (1,000 words) is due Jan. 1 and should be addressed to Prof. A.Y. Montgomery, 10 ACC, P.O. Box 4063, Mail Exchange, Melbourne, Victoria, 30001 Australia.

INTERNATIONAL ASSOCIATION FOR SOCIAL SCIENCE INFORMATION SERVICE AND TECHNOLOGY (IASSIST) '83, Philadelphia, May 19-22.

Iassist is soliciting papers on a variety of topics of interest to social scientists, data archivists, librarians, research administrators and government records managers. Fifteen papers will be presented in three areas: data services, hardware and software and data files.

Suggested topics in the area of data services include communicating with users, description and dissemination of data; checking data validity, limitation to data access; and data modifications and enhancements. Suggested topics in hardware and software include microcomputers and legal issues, storage and technology compatability and transportability of files, analysis of social networks and time series packages. Suggested topics for the area of data files include new data sources, new uses for old data, cross-sectional and longitudinal data bases, cross-national data sets, microdata and aggregate data and issues of privacy and confidentiality.

A letter of intent or an abstract should be sent by Feb. 15 to Sue Dodd, Program Chair, Institute for Research in Social Science, Room 256, Manning Hall 026A, University of North Carolina, Chapel Hill, N.C. 27514.

INTERNATIONAL CONFERENCE ON PARALLEL PROCESSING '83, Ohio State University, August 23-26.

Authors are invited to submit papers describing recent advances on all aspects of parallel/distributed logic circuits impact of very large-scale integration to parallel processor architecture, various concurrent-, distributed-, parallel-, pipeline-, or multiple-processor architectures, processor-memory interconnections, computer nets, distributed data base, reliability and diagnostics, modeling and simulation techniques, performance measurements, operating systems languages, or various applicaton studies.

The conference will accept both regular and short papers. For regular papers, four copies each of a 100-word abstract and the full text are required. For short papers, authors should submit four copies each of a 100-word abstract and a summary of 500 words.

Submissions are due Feb. 15 and should be sent to Dr. Howard and Leah Siegel, School of Electrical Engineering, Purdue University, West Lafayette, Ind. 47907.

TECHNOLOGY TRANSFER SOCIETY '83, Chicago, June 20-22.

The Technology Transfer Society is currently soliciting papers for its eighth annual meeting and international symposium. Requested topics include both the domestic and international and private and public aspects of technology assessment, technological forecasting and the technology transfer process.

Persons wishing to present a paper or chair a panel should contact Tom Jacobius, program chairman, IIT Research Institute, 10 W. 35th St., Chicago, Ill. 60616.

SPECIAL INTEREST GROUP ON COMPUTER GRAPHICS OF THE ASSOCIATION FOR COMPUTING MACHINERY (SIGGRAPH) '83, Detroit, July 25-29.

Siggraph is soliciting art, film and videotape works for its annual conference. The week-long art show will display computer-generated drawings, photographs, sculpture, prints and murals selected after a formal reviewing process. Also being reviewed for the art show are film and video works and installations involving computer graphics.

Submissions are due April 1 and should be sent to Art Show Chair Copper Giloth, Real Time Design, 531 S. Plymouth Court, No. 102, Chicago, Ill. 60605.

URBAN & REGIONAL INFORMATION SYSTEMS ASSOCIATION (URISA) '83, Atlanta, Aug. 14-17.

Urisa is accepting papers for presentation at their 21st annual conference. The aim of the conference is to encourage agencies to share their experiences in the use of computer technology in support of decision making at the federal, state and local levels.

Suggested topics include geographic systems techniques, interactive graphics, geographic and mapping systems for utilities and public works, census data processing, data base management, techniques of urban data analysis, parcel-level tax, title and planning systems, natural resources/environmental assessment, transportation planning, management information systems concepts, critical DP policy issues, local government information systems for operations management and service delivery, microcomputer applications, new technologies and what's ahead in computers and government.

For proposed papers, submit two copies of an abstract (which should not exceed half a page) to Urisa Secretariat, 4720 Montgomery Lane, Bethesda, Md. 20014.

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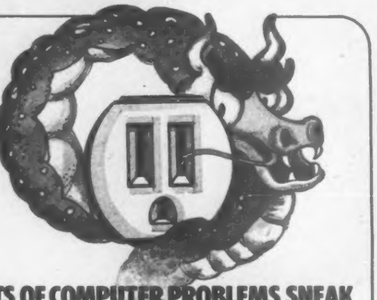

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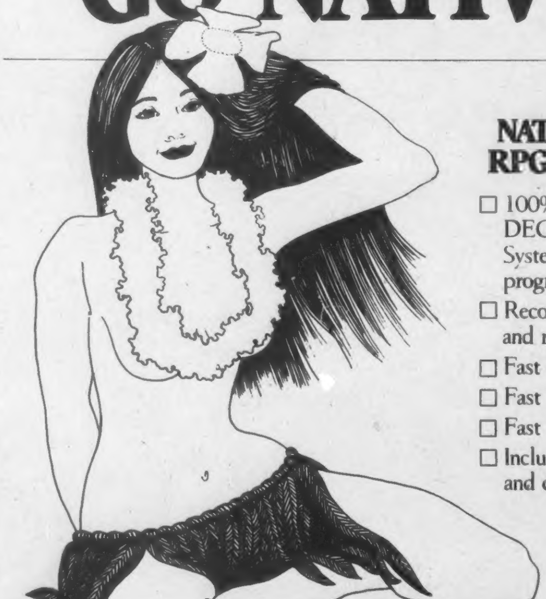

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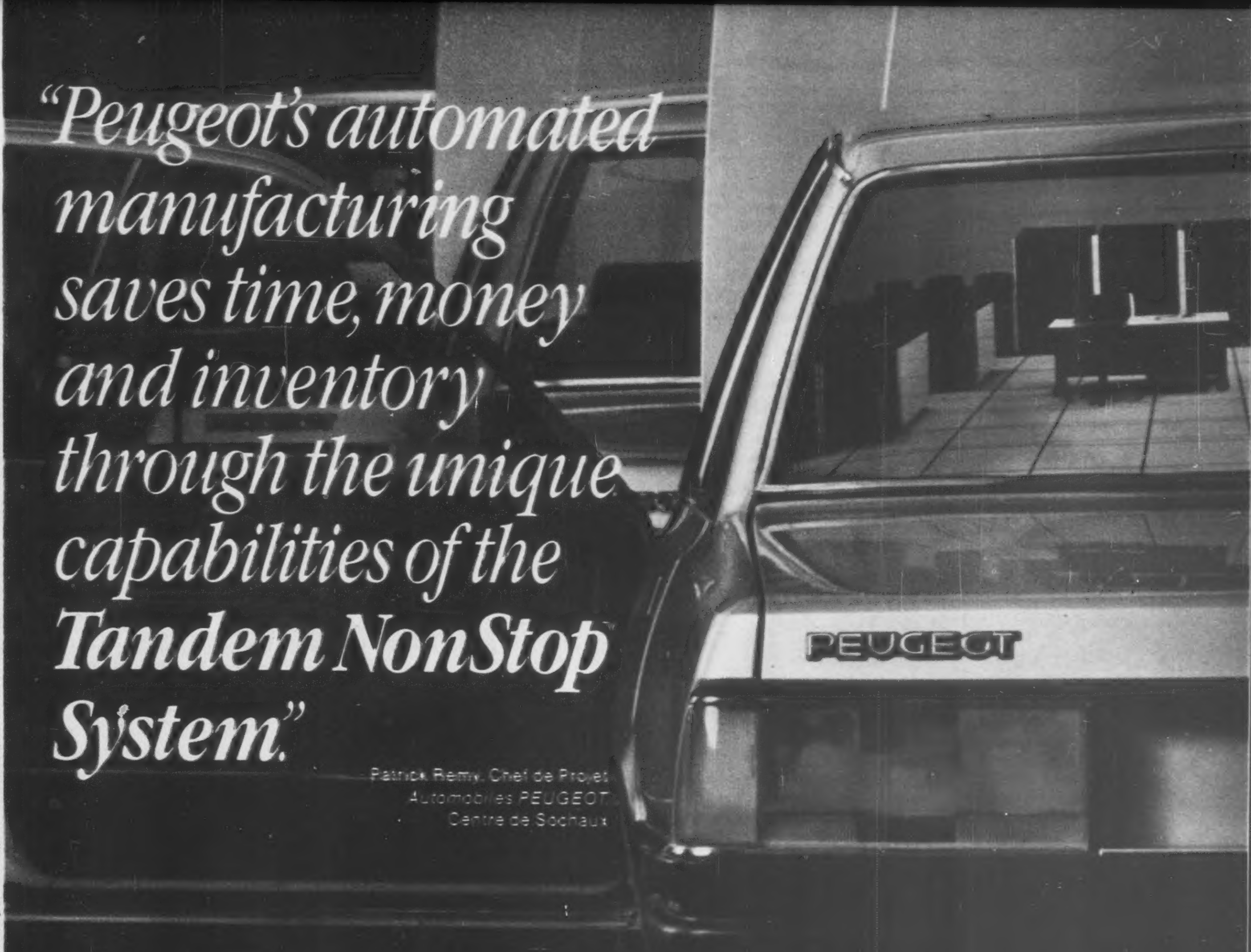

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TANDEM
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Calendar

Week of Jan. 2

Jan. 4-7, Chicago — **Vsam for Cobol Programmers (Vsam File Structures).** Contact: Software Information Services, Inc., P.O. Box 4132, Bellevue, Wash. 98009.

Week of Jan. 9

Jan. 10-11, New York — **Introduction to the Unix System.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

Jan. 10-12, Smithfield, R.I. — **Systems Analysis and Design.** Contact: The Center for Management Development, Bryant College, Smithfield, R.I. 02917.

Jan. 10-13, Boca Raton, Fla. — **Office Automation and Networks.** Contact: National Council for Education on Information Strategies, 286 Boston Post Road, Wayland, Mass. 01778.

Jan. 10-14, New York — **Unix Systems Workshop.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

Jan. 10-14, Chicago — **Structured Analysis/Design Workshop.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

Jan. 12, New York — **Files on the Unix Systems.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

Jan. 13-14, New York — **Shell Programming on the Unix Systems.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

Week of Jan. 16

Jan. 17-18, Washington, D.C. — **Computer Graphics for Business Management: Tools and Techniques.** Contact: Educational Resources Associates, Inc., P.O. Box 369, Brookline, Mass. 02146.

Jan. 17-19, Palm Beach, Fla. — **Disaster Planning Seminars.** Contact: EDP Security, 181 West St., Waltham, Mass. 02154.

Jan. 17-19, Short Hills, N.J. — **IMS DL/1.** Contact: Chubb Advanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

Jan. 17-20, Santa Clara, Calif. — **The Jovial-Ada Users Group.** Contact: Rick Deutsch, Intel Corp., 3065 Bowers Ave., M.S. SC6-306, Santa Clara, Calif. 95051.

Jan. 17-21, Washington, D.C. — **Systems Analysis Workshop.** Contact: Bill Schoonmaker, Brandon Systems Institute, 4720 Montgomery Lane, Bethesda, Md. 20814.

Jan. 17-21, Boston — **Structured Analysis Workshop.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

Jan. 17-21, Boston — **Quality Assurance & Testing Workshop.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

Week of Jan. 23

Jan. 24-26, Hartford, Conn. — **Control Program Internals.** Contact: The Adesse Corp., P.O. Box 515, Ridgefield, Conn. 06877.

Jan. 24-28, Los Angeles — **Structured Analysis/Design Workshop.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

Jan. 24-28, Greenwich, Conn. — **Structured Design & Programming Workshop.** Contact: Bill Schoonmaker, Brandon Systems Institute, 4720 Montgomery Lane, Bethesda, Md. 20814.

Jan. 24-28, New York — **Software Maintenance Workshop.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

Jan. 25-27, San Francisco — **Automated Office Expo & Software/Expo-West.** Contact: Doyle Dane Bernbach, 425 Bush St., San Francisco, Calif. 94108.

Jan. 27-28, Washington, D.C. — **Computing Technology for Noncomputer Professionals.** Contact: EFDPMA Seminars, Department CT, P.O. Box 3608, Torrance, Calif. 90510.

Week of Jan. 30

Jan. 31, Dallas — **IBM-MVS Training Seminars.** Contact: Acts Corp., 11910 Gate Way, Austin, Texas 78759.

Jan. 31, Boston — **Listening and Feedback for Professionals.** Contact: Gail C. Ross, Computer Education Services of Boston, Inc., 739 Boylston St., Boston, Mass. 02116.

Jan. 31-Feb. 2, Washington, D.C. — **Design Techniques Workshop.** Contact: Bill Schoonmaker, Brandon Systems Institute, 4720 Montgomery Lane, Bethesda, Md. 20814.

Jan. 31-Feb. 4, Pittsburgh, Pa. — **Structured Design & Programming.** Contact: Bill Schoonmaker, Brandon Systems Institute, 4720 Montgomery Lane, Bethesda, Md. 20814.

Jan. 31-Feb. 4, Washington, D.C. — **Software Maintenance Workshop.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

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Meet to Cover Printer Outlook

CARMEL, Calif. — The Institute for Graphic Communication, Inc. will sponsor a three-day conference on the "Outlook for Computer Printers" Feb. 13-15 at the Highlands Inn here.

The conference is devoted to a discussion of technological trends in printing techniques including currently available printers and possible future announcements. Irving L. Wieselman from Dataproducts Corp. will be the chairman of the session.

The small group conference costs $695 (including hotel costs), $595 for the conference only. More information is available from the institute at 375 Commonwealth Ave., Boston, Mass. 02115.

Two- and Three-Day Meets

Datapro Unveils Schedule for '83 Seminars

DELRAN, N.J. — A new series of two- and three-day seminars is now being offered by Datapro Research Corp. in a number of locations.

"Distributed System Design: Microcomputers to Mainframes" will be conducted in San Francisco, Feb. 7-9; Washington, D.C., March 14-16; Los Angeles, April 6-8; New York, April 18-20; and then in Chicago, May 4-6. The course focuses on how to determine which microcomputers, hardware, software and network components are suited to specific distributed applications.

"Productivity in MIS: Defining Measurement and Establishing Programs" will be held in San Francisco, Feb. 17-18; New York, March 10-11; Chicago, April 14-15; and Washington, D.C., May 23-24. This seminar is recommended for systems managers and other information professionals responsible for performance.

"Optimizing Source Data Entry: Design Techniques" is the title of the third program, slated to take place in Chicago, March 7-8; New York, March 24-25; Washington, D.C., April 25-26; and then in San Francisco, May 5-6. The latest techniques for assuring that data entry will produce reliable, productive and accurate results will be examined in this seminar, Datapro claimed.

"User-Friendly Information Delivery: Approaches to On-Line Systems Development" will explore the expanded role of computers in online applications and the growing need for modern information systems that fit the different requirements of end users, Datapro said. It will be presented in Chicago, March 7-8; New York, March 17-18; Washington, D.C., April 18-19; and San Francisco, May 23-24.

A seminar entitled "The Personal Computer: Strategies for Managing" will look at the different types of personal computers available and their related software, operating systems, networking capabilities and limitations. It will be presented in New York, March 7-9; Chicago, April 11-13; and Boston, May 25-27.

"Data Communications for Microcomputers: Acquisition, Application and Implementation" is the last seminar in the series. Focusing on the integration of microcomputers into a data communications network, it will be held in New York, March 9-11; San Francisco, April 13-15; Washington, D.C., April 25-27; and Chicago, May 25-27.

The seminars cost $695 for Datapro clients and $765 for others. They are also available on an in-house basis, Datapro noted.

Further details can be obtained from the research company at 1805 Underwood Blvd., Delran, N.J. 08075.

Meet Examines Values, Micros

WILTON, N.H. — A weekend workshop entitled "Computers and Personal Values: Sharing the Experience," designed to examine whether computers blind people to the kinds of problems they can't solve, will be presented by a computer consultant in two sessions: March 4-6 in Harvard, Mass., and again May 20-22 in Temple, N.H.

The workshops will emphasize small and large group discussions. Also, the sessions will present an opportunity for people in the computer field to examine the personal, ethical and moral questions concerning the impact of computers in society, according to Arthur Fink, who organized the sessions.

The workshop costs $150. More information is available from Fink, Box 614, Prince St., Wilton, N.H. 03086.

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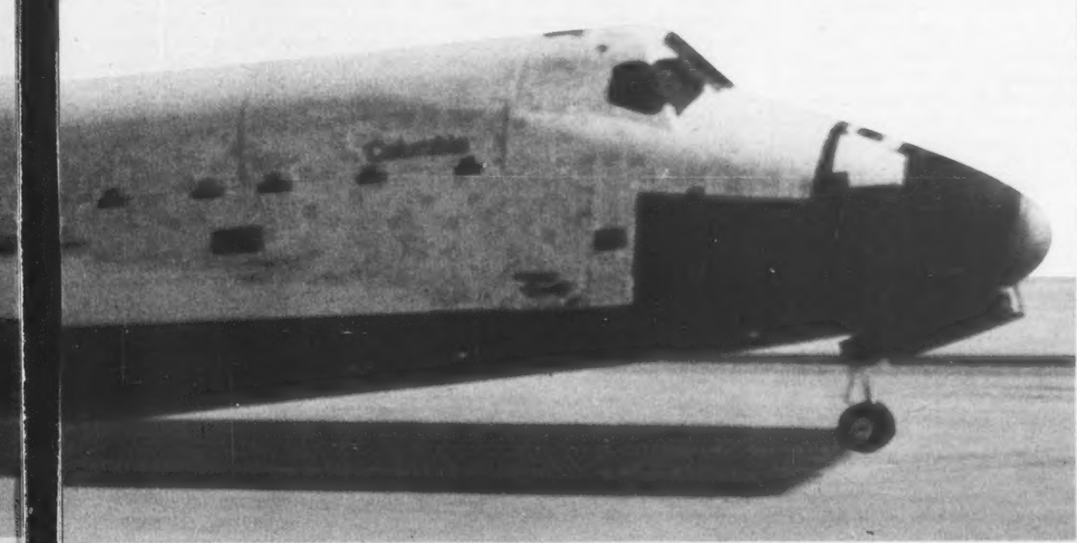

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EDITORIAL

Very Good News

The news that 13 data communications and electronics companies have endorsed a proposed local-area network standard hammered out by the long suffering and much maligned IEEE 802 Local-Area Networks Standards Committee is good news, indeed.

The standard in question describes the carrier-sense multiple access with collision detection (CSMA/CD) line access scheme [CW, Dec. 13]. It is one of three documents collectively known as "P 802.3," which were recently approved by the 802 committee and passed on to the Institute of Electrical and Electronics Engineers as a whole for its approval.

CSMA/CD has achieved widespread notoriety because of its association with Xerox Corp.'s Ethernet local-area network. In the past 2½ years, during which the 802 committee has been working on standards, the degree to which the 802 CSMA/CD standard would comply with Ethernet's publicly available "Blue Book" specifications has been the source of considerable controversy and infighting.

At one point, it looked as if the 802 committee would come up with something significantly different from Ethernet. At that time, Xerox and other Ethernet-compatible manufacturers were already shipping products. Those manufacturers were fully prepared to stick to their specs, leaving the IEEE with a widely ignored standard, had the CSMA/CD standard varied dramatically from Ethernet.

Enter the European Computer Manufacturers Association (Ecma). Ecma gave the 802 committee an efficacious kick in its motivation center when it said in a letter that it had checked out the Ethernet CSMA/CD and found it to be quite satisfactory. Despite the protests of some 802 committee members who thought the scheme still needed more work, Ethernet — or, technically, a close facsimile of Ethernet — carried the day.

The significance of the endorsement lies in the fact that the 13 supporters represent Xerox and the major Ethernet-compatible manufacturers. These are the holdout organizations that probably would have bolted from the standards fold if Ethernet had not won out.

It looks as though the IEEE will give its blessing to P 802.3 and part of the long standards saga will have run its well-publicized course. Things have worked out for the best. Ethernet was a de facto standard that could not be ignored.

There is one remaining piece of business. Everyone associated and concerned with the local-area network standards process should give a tip of the hat to 802 committee Chairman Maris Graube. The unflappable Graube acted with equanimity when he was surrounded by a highly charged political environment, thereby winning himself almost unanimous acclaim from other committee members.

DATA PAST

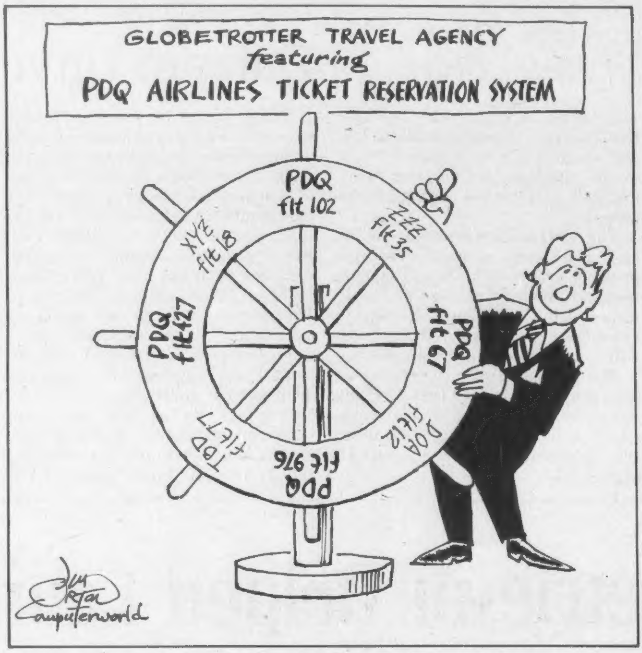
Five Years Ago
Dec. 19, 1977

WASHINGTON, D.C. — The National Crime Information Center's computer operating system did not meet the requirements of the Privacy Act of 1974, and sources within the Federal Bureau of Investigation claimed that the bureau had tried to conceal this information from Congress.

Ten Years Ago
Dec. 27, 1972/Jan. 3, 1973

NEW YORK — An internal IBM memo stated that an "intensive investigation" of IBM's pricing policies "would reveal the extent of our price control and its supporting practices" in the computer market.

"Such a revelation would not be helpful to our monopoly defense," the memo added.



LETTERS

Thanks for the Memories

You stir old memories and rekindle long smoldering fires with your reflections on Data Past [CW, Nov. 29].

The Dec. 6, 1972 story of IBM marketing by fear and smear tactics was not new then and has been repeated with variations many times since. Very few organizations and even fewer individuals have stood their ground against the all-powerful giant and taken their cases to the media for fear of professional ruin.

The subject of the 1972 story, Arthur Hill, has, among his mementos of the occasion, a very rare document — a written apology from IBM; the state of Delaware went ahead with his third-party lease plan in spite of IBM; and he moved on to the state of New Hampshire and a very professional relationship with its prime contractor, Honeywell, Inc.

In a *Newsweek* interview in October 1973, Hill commended IBM's organization and training programs as the "best in the business," but suggested that IBM personnel are never taught how to "lose gracefully," to which Frank T. Cary (then IBM president and board chairman) responded, "We don't really train losers." It does seem inevitable that everyone, right or wrong, even the federal government, must eventually lose to IBM.

And what about all the others from the past? Has the specter of career and financial ruin haunted the gutsy individuals who dared to stand their ground against the power of "Big Mother?" Remember Gov. Exon and Ernie Kavaly of Nebraska; Britt Williams of Georgia; George Waterman of Warwick, R.I.; William Smith of Pittsburgh, Pa.; Bill Williams of Oakland, Calif. (and Portland, Ore.); and so many more from a decade ago? If it were not for *Computerworld*, which never fears telling it like it is, we might not ever have known the story or might not remember it now.

Oh yes, and what ever happened to Hill?

I am very content, thank you, on the staff at Maxwell Computer Institute in Norristown, Pa., passing on to a new generation of computer professionals some of my past experience — including my advice on personal and professional integrity *and eternal vigilance*.

And guess what brand of hardware we use? Third-party, of course.

Thanks again for the memories.

Arthur T. Hill
Instructor
Maxwell Computer Institute
Norristown, Pa.

We Can't Be Complacent

It seems dangerous to assume, as W. Michael Blumenthal in the interview "Blumenthal Tells How He's Changing Burroughs" [CW, Nov. 15] and many others do, that somehow a "software problem" will keep the Japanese from seriously competing with our computer industry.

Currently, the Japanese are skirting that problem in the personal computer market by offering excellent machines that run existing software. Nothing prevents the same strategy from being applied to other segments of the market.

When the Japanese introduce the next generation of computers, the software undoubtedly will be developed in the market country — by Japanese subsidiaries and other software houses. Superior machines will sell; the software will be developed.

If our domestic computer industry does not wish to evolve into a group of software houses producing programs to run on Japanese hardware, we can't become complacent about Japanese capabilities and intentions.

Charles W. Haydon
Rochester, Minn.

SOFTLINE/Werner L. Frank‡

Ordered Statement, Directed Prompt Schemes

In the last column, we reviewed implementation systems alternatives based upon the use of a specification format syntax. We now turn to systems that have as a common base the language structure of ordered statements and directed prompts. These are shown in the table presented here.

Examples of such systems are various query languages and report writers, as well as the application-solving facilities of data management systems. These systems are often incorrectly described as having an English orientation. The semantics vary from directives that are highly oriented toward data processing to application specifics. The syntax could require a stylized, formatted and ordered set of statements, as well as a seminatural language presentation.

At the application-generator level, there is an automatic Cobol code generator represented by System 80, offered by Phoenix System, Inc. This product is positioned at point (2,1,2). System 80 is a highly interactive, line-by-line, prompting system that solicits responses from the application developer from which the finished, structured Cobol program is generated.

Three Main Modules

There are three main modules that accomplish this task. First, the system prompts the developer for a complete file definition in order to generate one or more dictionaries.

Then the user has an option to develop either data entry or processing programs. The data entry generating module creates the program that, upon execution, guides the input of data in order to generate and maintain files. The module developing the processing logic will generate the program that performs information retrieval and reporting.

A comparable system aimed at the microcomputer market is DJ 'AI' Systems Ltd.'s The Last One. It has characteristics similar to System 80, except that it generates Basic code.

Deceptive Descriptions

As we now move farther to the right in the table, there is a common tendency by system vendors to describe their offerings as "English-like" or "free English." Such descriptions are deceptive and can easily mislead the potential user. Although systems falling into these categories use the English (or some other) language, the style and form are not those of a natural language. An example is:

- FILE personnel.
- SEGMENT department.
- SELECT location if location = "New York."
- SELECT name.
- LIST name location telephone.
- TITLE "Special Report."

This short "program" illustrates the point. It is English in appearance, but has a well-structured form and flow and is performance-oriented by virtue of the action verbs (FILE, SEGMENT, SELECT, LIST, TITLE), which are predefined commands.

The payoff from these "ordered statement" systems is, of course, substantial. They replace the more conventional Cobol programs by a convenient shorthand that may be briefer in number of lines of directives by one or two decimal orders of magnitude.

A good example of such a system is Easytrieve, a product of Pansophic Systems, Inc., placed at location (2,2,1). There are many other competitive products that belong to this niche of solutions, such as DYL-260 of Dylakor, Inc., Answer/DB of Informatics General Corp. and even the most recent, IBM's Sequel.

Integrated Solution	203	213	RAMIS II 223	VISICALC 233
Application Generator	202	SYSTEM 80 212	AIMS PLUS 222	MIMS 232
Structured Discipline	201	211	EASYTRIEVE 221	SAS 231
Ad Hoc Aids	200	210	220	230
	Assembler	**Compiler**	**Symbolic/ Function**	**Application**

Implementation Schemes for Ordered Statements and Directed Prompts Syntax

The Aims Plus system of Aims Plus, Inc. is assigned to point (2,2,2). This system is very much like System 80, its neighbor to the left in the table. The difference is that Aims Plus does not generate or depend upon Cobol or any other code. Instead, the user's responses to the interactive prompts are fed into tables, and the resulting "application program" is then executed interpretatively.

Determining the assignment of a system between locations (2,2,1) and (2,2,2) necessitates drawing a fine line between a query system suitable for ad hoc information analyzing and a capability for developing a production-oriented, ongoing application.

The complexity of identification and categorization increases as many new systems emerge, especially at the microcomputer end.

We now take another step in the direction of dropping machine dependency by examining location (2,2,3), where we have a nonprocedural language approach and a fully integrated solution environment.

This situation is exemplified by popular data management systems enhanced by user-prompted or stylized English front-end languages. Nomad of National CSS, Inc. and Mathematica Products Group's Ramis II system already cited are good examples of this technology.

(Continued on Page 28)

HUMAN CONNECTION/Jack Stone‡

All I Want for Christmas Is a 16-Bit Upgrade

The time: Christmas Eve.

The place: The downstairs family room of a home in Anytown, U.S.A.

The scene: Laurie, a first-grader, is sprawled all over the rug, chin cupped in palms, staring at the color TV. Peter B., her second-grade brother, stumbles through the door and falls down beside her. Both Laurie and Peter B. are wearing the long faces of rejection.

Laurie growls, "Is it possible we are forever doomed to the boob tube? These reruns are driving me crazy."

"I suppose we could regress to Monopoly, if we have to. But should the kids next door ever catch us playing it, we will wind up as social outcasts," answers Peter B.

"I read somewhere that its producer is now offering an automated version."

"Is it particularized to the application or part of a broader capability?"

"I only breezed through the write-up, but its processing function seemed to be dedicated to just that game."

"So, yet another producer of computer-based games will bite the dust. When will they understand that we kids expect a multigame facility as part of a general-purpose computing environment?"

"Peter B., do you know I've got some critical projects, and I've come to a screeching halt without machine access?"

"You think you have problems? I've just finished the specs of my nuclear holocaust game, and I'm ready to program it, but I haven't had my hands on the console in days."

"Hey, tell me the logic that you finally settled on."

"Well, you are the president of the U.S. and you are playing against the machine, which represents the president of the USSR. The idea is to organize your strategic forces in ways to maintain a superior nuclear deterrent, taking account of nuclear missile capabilities that are proliferating into the third-world countries. It's some kind of simulator."

"By the way, who's on the machine now?"

"Mom has it all to her lonesome, and she doesn't have the faintest idea what she's doing with it. Did I tell you that she still has trouble responding to 'Main Menu'? Every so often, she forgets what she's doing and enters the main course for the evening meal."

"Peter B., we shouldn't be critical if she wants to share our experiences. She's determined to learn computer concepts on her own with the Computer-Tutor software and she is progressing, although she's aging rapidly in the process."

"Dad has insisted on taking it over for the rest of the evening. He is trying desperately to operate the Checkbook Reconciler software and continues to have a devil of a time. If he'd only suppress his inflated ego long enough to ask for my help, I could get him going in 10 minutes."

"Now, Peter B., you really are being unfair. Look, you've had two solid years of experience and are practically a 'computer bum.' While you're writing programs, Dad is out trying to earn a living to support you. You can't expect him to become literate overnight."

"No, but sometimes I wonder if new users over 35 still have the brainpower left to deal with computing machinery. I suspect that the last time they tried basic arithmetic was in their senior year of high school."

"Hey, they're coming downstairs now. Must be a machine failure."

The father and mother approach, each holding two large-size gift-wrapped boxes.

"Children," began the father, "Santa Claus just made a special trip to our home and brought these presents for you. He said that you deserve them because the two of you have been so patient about our trials at the computer terminal."

After a hurried session of tearing off the ribbons and the wrapping paper, Peter B. and Laurie, with their eyes popping, finally held up the two boxes.

"Mom and Dad!" they screamed. "A 16-bit upgrade board and dual, add-on remote workstations, so three of us can access at the same time! You are both computer geniuses!"

Have a wonderful holiday season and a happy new year!

LETTERS

From the IRS to Business

I feel I must comment on the current 10% interest withholding proposal, which is discussed in "IRS Eases Regulations on 10% Withholding, But Bank DPers Say It's Still a Hardship" [CW, Nov. 22].

I rely upon my 30-year career in data processing in coming to the following observations and recommended solution.

I perceive the new requirement for withholding as a transference of responsibility from the Internal Revenue Service to the business community. It is an attempt to resolve a basic twofold problem:

- The IRS cannot account for all interest payments, particularly those payments made on bearer-bond-type instruments.
- The IRS cannot provide automated verification that interest paid by institutions and reported on 1099 forms issued by the IRS is accounted for by the recipients on their personal and/or corporate tax returns.

Therefore, it would appear to be more logical, and probably a lot less costly, to resolve the problem at its source by requiring:

- Payees of bearer-bond-type interest to provide for reporting such payments on 1099s in the same manner in which account interest is reported.
- The IRS to enhance the method and/or procedures and the programs within the IRS tax systems for receiving that data and process it for reconciliation with the applicable tax returns filed by the recipients of interest payments.

This also would be consistent with the existing regulations and the systems and procedures already in place for processing the data received in accordance with those regulations.

Victor M. Guarnera
Metuchen, N.J.

Broaden Your Horizons

I am amused with the announcement in "Cobol Development Aid Out, Supports Ansi Cobol 68 or 74" [CW, Nov. 15] of yet another $20,000 aid to writing Cobol programs.

The product mentioned, no doubt, simplifies and standardizes the chores of matching input files and more. But such features have been standard in the RPG-II language for over a decade. In recent years, RPG-II support has been extended to cover DL/1, CICS/VS, CMS, you name it.

Managers who allow the use of Cobol should realize that in terms of man-hours for development, they're paying triple for results.

Cobol might have been amazing in the 1950s, but if you're still drawing "pictures" for your computer, you should broaden your horizons.

Joel Chinkes
Business Consultant
Atlanta, Ga.

Reviewing Alternatives

(Continued from Page 27)

Ramis II is an especially good candidate, since it is much more closely tied to its data base than Nomad is, which depends to a large degree on its associated operating system for data base definition and the edit function.

At point (2,3,1), the data analysis system SAS from SAS Institute is identified. The system generates a variety of statistically oriented reports as a result of writing a number of ordered statements.

The Mitrol Industrial Management System (Mims) of General Electric Information Service Co. represents the point (2,3,2). This nonprocedural approach to building applications is oriented to the special needs and functions of manufacturing.

The system includes a data base, a general report writer and a transaction processing capability. Application orientation comes about because of highly specialized manufacturing-oriented command statements, such as PLAN.

In invoking this verb, which operates on variables such as time period, a manufacturer's resource planning explosion for a specific part can be automatically generated. For each chosen interval of time, this shows such items as material required, on-hand and available, together with planned release dates and so on.

The last-cited example in the table is Visicorp's Visicalc, which is at point (2,3,3). This is a complete system, fully prompted to assist accountants and financial planners in defining, building and manipulating the conventional spreadsheet.

Frank is executive vice-president of Informatics General Corp. in Woodland Hills, Calif.

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Using Call Routines, Cobol Programs

DMS Cuts Costs for Reinsurance Firm

By Paul Gillin
CW Staff

NEW YORK — Although many users of IBM's Development Management System (DMS) have expressed dissatisfaction with that package recently [CW, Oct. 11], a reinsurance firm here has found that the creative use of call routines and Cobol programs can make DMS a low-cost vehicle for application development.

Duncanson & Holt, Inc., managers for the American Accident Reinsurance Group, provides management skills and reinsurance technical personnel for 10 reinsurance companies and pools with a total of 200 brokers nationwide.

Rapid growth in the last five years has led the company to upgrade from an IBM System/34, processing mostly batch applications, to an IBM 4331 running DOS/VSE.

In 1980, the company went searching for an application development package, but found the most sophisticated development aids were also the most expensive. "Our costs had gone from $6,000 per month to $20,000 per month almost overnight," said Tony Stuto, the company's vice-president of management information systems. "Pure economics dictated that we couldn't spend a lot on a development package. DMS gave us a kick up at a relatively low cost."

Although problems with DMS surfaced almost immediately, Stuto said the company was financially committed to it for a major piece of development. "The documentation and support was bad," he said. "Our overall system design called for greater capabilities than DMS offered; however, budget considerations gave us no other outlet. The only way we got through was by trial and error."

Stuto and a programmer began work on a processing package for accident and health reinsurance in August 1980. Although DMS was limited on a stand-alone basis, Stuto said, the desired package, called the Reinsurers User Service System

(Continued on Page 32)

Electronic Spreadsheet Package Serves CICS-Based Mainframes

By Lois Paul
CW Staff

IRVINE, Calif. — An electronic spreadsheet package designed for use on IBM and plug-compatible CICS-based mainframes has been announced by Tower Systems, Inc.

The software was intended to bring the capabilities of microcomputer-based spreadsheet software to large multiuser systems, including the IBM 30 series, 4300 and System/370 series running under OS, DOS/VS(E) and MVS operating systems with CICS.

Omnicalc will function as a CICS application system to handle on-line, real-time accounting and forecasting functions, the vendor explained. It uses a matrix consisting of 26 columns lettered A to Z across the top of the display screen and 99 rows numbered vertically down the left side. Each cell in the matrix may contain either alpha or numeric data.

Users reportedly can define screen formats and write programs for a variety of applications. The individual matrices are intended to provide an unlimited number of individually tailored screens. Row and column references allow calculations to be performed on numeric data with the results instantly returned to the proper location in the matrix, the vendor said.

Once the work sheet has been designed by the user, Omnicalc allows the user to change the information on the spreadsheet by entering new values into any matrix location, the vendor said. All dependent information will be updated automatically.

Omnicalc operates in three functional

(Continued on Page 36)

ADR Offers 'Dataquery' Release

PRINCETON, N.J. — Applied Data Research, Inc. (ADR) has announced release 3.0 of Dataquery, its relational query system that operates in on-line and batch modes on IBM computers and plug-compatible hardware.

The new release is said to allow authorized users to insert, modify or delete data fields in selected data base records. Users can directly implement applications and application developers can prototype and test new systems, a spokesman said.

A field-level security enhancement enables the data base administrator to define specific data fields that may be accessed or modified by a particular user. With ADR's Datadictionary, the data base administrator can restrict users to subsets of specific record collections based on the contents of any field within the selected records.

On-line Dataquery operates in conjunction with the batch version by providing new commands that allow a query to be submitted through the internal reader for immediate or deferred batch execution, the spokesman said. The Boolean selection facility has been extended to allow users to select records based on values calculated from fields in each record.

The new release will be available in the first quarter of 1983. Permanent license price is $17,000 for OS environments, $14,000 for DOS environments and $10,500 for IBM Models 4321, 4331, 370/115, 370/125 and 370/135. The company is located at Rt. 206 & Orchard Road, CN-8, Princeton, N.J. 08540.

'C-Star' Aids 370s, Compatible CPUs

DOWNERS GROVE, Ill. — A software program for IBM 370 and compatible equipment running under MVS or OS/VS1, that reportedly allows users to obtain data set and file information from tape, is available from Circle Software Corp.

C-Star features English key word commands, flexible syntax and clear diagnostics. C-Star is said to list tape volume of contents including serial number, owner, data set names and file qualities.

C-Star costs $3,400, including one year's maintenance and enhancements. Circle Software is located at Suite 240, 1100 31st St., Downers Grove, Ill. 60515.

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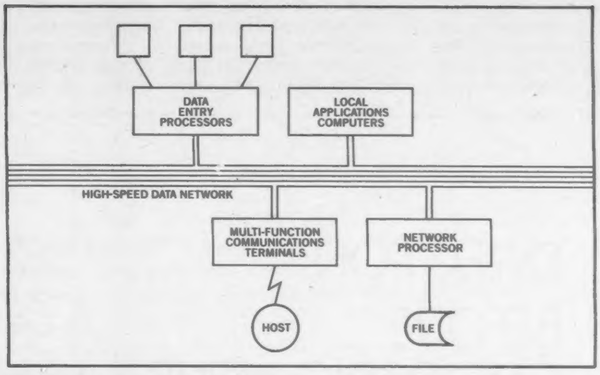

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Call Routines, Cobol Said to Boost DMS' Utility

(Continued from Page 29)

(Russ), was eventually developed through the use of supporting call routines and programs written in Cobol. The process took 14 months.

The system designers had to overcome DMS' editing limitations to create Russ. "With DMS, it's easy to put up a screen, but to edit data you need to use a noninclusive edit file," Stuto said. "We had to create exit routines that went outside DMS, where we could do some Cobol programming and edit checking and then bypass error routines to get back into DMS and continue." The exit routines made DMS "a hell of a lot more efficient tool than it was when we got it," Stuto said.

Used Nationwide

Russ is an on-line package providing data entry, inquiry and updating capabilities from individual terminals. Used by a nationwide network of 200 brokers, the system allows individual agents to handle their own account files — including quotations and placement, rate calculations, policy, claims and loss administration, premiums assumed and ceded, receivables and payments — and to integrate their data with the central data base in New York.

Operators at the New York office can call up an individual broker's account to browse and apply payments while keeping a running control on cash going into and out of the account. Safety features prevent the operator from getting out of the account until the cycle is completed and ensure that the operator cannot apply more funds than are stipulated for that account, Stuto said.

Russ has enabled Duncanson & Holt to cut its accounts receivable backlog by 20% to 30%, Stuto said. "Previously, almost all processing was done in batch," he said. "That provided totals and a summary, but we didn't really have the ability to see what was happening in individual cases. Now the operators can call up accounts receivable information on their video screens and have the file up-to-date through the last bill entered. In these times of tight money, turning around receivables has made quite a difference."

Less easily measured is the money saved through accurate forecasting, Stuto added. "We have a lot more timely statistics available to everyone and the ability to foresee potential problem areas," he said. "We have grown very rapidly in the last five years, but because we were operating in a manual mode, some questionable business got lost in the shuffle. The on-line method enabled us to get out of unprofitable businesses more quickly."

The programming staff has now turned its attention to developing a similar system for property and casualty reinsurance.

"From a purely economic standpoint, I don't think we could have done as well with a high-blown package," he said. "In order to develop on-line expertise, we have developed our own CICS command routines. We can use regular programmers with two or three years of experience, which we couldn't do with a more sophisticated package. Now that we have the necessary skills we can do a lot more applications quickly without highly technical people."

DIRECTION:
BEFORE CHOOSING YOUR SOFTWARE SYSTEM,
CHOOSE YOUR STRATEGIC SOFTWARE PARTNER.

Today, it's evident that software has surpassed hardware as the key strategic element of the corporate information system.

But a software strategy built upon patchwork, multi-vendor approaches is simply another form of the outmoded hardware orientation. Direction in software begins with choosing a single supplier that can "partner" with you in building the software infrastructure you need to support all systems requirements.

Your software partner should be one that can:

- Create and deliver new software, not just provide enhanced or repackaged old technology.
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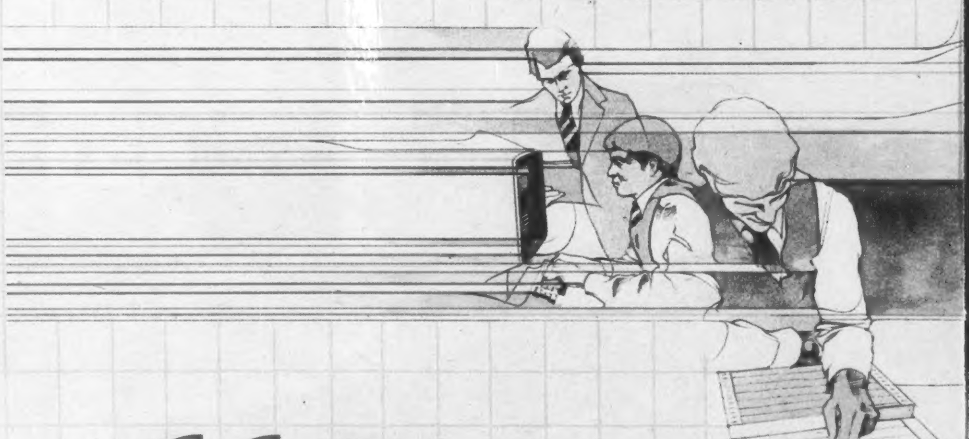

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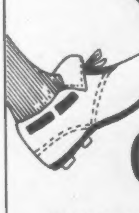

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Methodology Developed for Cullinane Users

NEWTON, Mass. — Eastern Technical Associates, Inc. has announced Data Based Development Methodology (DBDM) for users of Cullinane Database Systems, Inc.'s IDMS, Integrated Data Dictionary and Application Development System software products.

DBDM is said to establish standards, procedures and controls for planning, directing, scheduling and controlling data base development. The product provides a means to examine business plans and translate them into user requirements that evolve into a system plan and produce data-based implementation specifications.

DBDM produces integrated data-driven systems based on business requirements that are designed according to Cullinane standards, a spokesman said.

The package consists of six primary modules and eight supplemental modules. Primary modules include business systems planning for business and management information systems, business functional analysis, logical data base definition, transaction definition for data-based systems and physical data base design.

A license fee costs $15,000 from 189 Wells Ave., Newton, Mass. 02159.

'Top Secret' Security Tool Updated

MARLBORO, N.J. — CGA Computer Associates, Inc. has announced enhancements to its Top Secret security package for IBM MVS users.

An implementation aid is said to provide an accurate historical picture of all information accessed. It sorts through all resources on the machine and indicates who is using what information. It also sorts through CICS, TSO and IMS definitions to compile an inventory of users and accessible data.

SPF (System Productivity Facility) administration menus offer a complete display of available security options that can then be chosen by placing an "X" in the area to which the user or group is to have access. Definition and help screens are available for the terms used.

The enhancements are provided at no charge to current Top Secret users. The package costs $900 for the first CPU from CGA at Cannon Hill Farm, 255 Rt. 520 E., Marlboro, N.J. 07746.

SIS Ties DSS To Micros

RADNOR, Pa. — Sun Information Services Co. (SIS) has announced an interface between personal computers running Visicorp's Visicalc and the company's decision support systems (DSS) product line available on its service network.

DSS functions available through the personal computer interface include financial modeling and planning, data base management and statistical analysis. The interface is not dependent on any specific type of personal computer, a spokesman said.

The requirements for operation of the package are Visicalc software and a communications capability that includes file upload and download.

The interface is available at no charge to SIS users, a spokesman said from 280 King of Prussia Road, Radnor, Pa. 19087.

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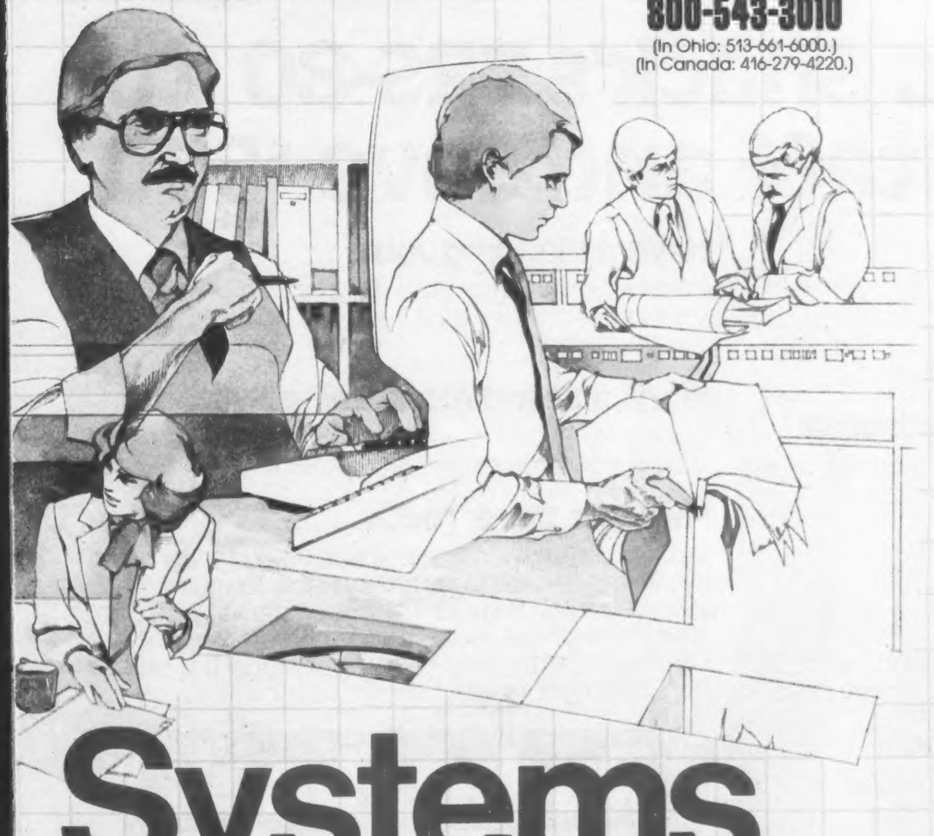

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'EZ Speed' Runs on Wang

LAS VEGAS — A record management system designed for Wang Laboratories, Inc.'s 2200 computers has been announced by The Office Manager, Inc. (TOM).

Called EZ Speed, the product is said to enable nonprogrammers to create and maintain files and produce reports. Input forms and menus are developed with a text editor, a spokeswoman said. Prompts, input forms and an on-line Help function are included.

Records can contain information on inventories, customers, vendors, sales leads, equipment, warranty records, work orders, engineering drawings or any card catalog-type file, the spokeswoman said. Records consist of up to 255 fields. Field data can be retrieved from up to 30 other on-line files. Field minimums, maximums and default values are set through standard form fill-in.

The package costs between $750 and $2,000, depending on hardware configuration and services from TOM at 127 S.W. 156th St., P.O. Box 66596, Seattle, Wash. 98166.

MSA Ties Micros To Mainframes

ATLANTA — Management Science America, Inc. (MSA) has announced the availability of MSA Executive Peachpak, the first of its product offerings designed to combine mainframe and microcomputer software.

In line with this, the firm's subsidiary, Peachtree Software, Inc., has introduced Speachware, a computerized speech system for the microcomputer market.

MSA Executive Peachpak is a set of desktop applications for the microcomputer featuring a direct link to MSA mainframe systems. It is designed to allow a user working at a personal computer to access information in corporate data banks on large computers.

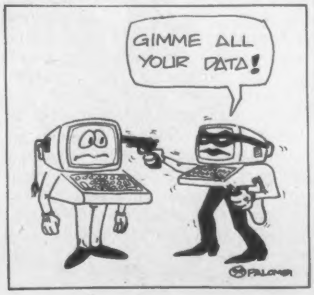
Its applications for the personal computer include Peachcalc, an electronic spreadsheet; a business graphics system; telecommunications software for direct communication with other microcomputers and with commercially available data bases; Peachtext, report production software for the personal computer; List Manager, a mini-personal data base; and Peachlink, software designed to provide the link to MSA mainframe systems.

Executive Peachpak reportedly is available with all MSA mainframe software systems. The price for Executive Peachpak is $3,750, with minimum order quantities of eight.

The Speachware feature initially will be compatible with the IBM Personal Computer. The user's investment will be about $400 to add the synthesizer board, which reproduces speech, to existing hardware, according to the vendor. The Sybil Board was developed exclusively for Peachtree by Centigram Corp. of Sunnyvale, Calif. Speachware is said to use regular digital files which can be created, edited and accessed.

Peachtree reportedly plans to introduce the Speachware feature to enhance and simplify the presentation, sale and understanding of existing Peachpak software.

Further information about either product can be obtained from MSA at 3445 Peachtree Road N.E., Atlanta, Ga. 30326.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Precision Visuals Enhances 3-D Running With 'DI-3000'

BOULDER, Colo. — Precision Visuals, Inc. has announced enhancements to its three-dimensional contouring system, which works in conjunction with the company's DI-3000 software package for computers from IBM, Digital Equipment Corp., Hewlett-Packard Co., Control Data Corp., Prime Computer, Inc., Harris Corp., Cray Research, Inc. and Data General Corp.

The upgraded package makes it possible to generate three-dimensional perspective mesh surfaces and contour maps on a variety of display devices, a spokesman said.

The system also offers optional hidden-line removal, viewing from any angle, explicit or implicit scaling of the Z-axis of the grid, as well as the ability to draw a skirt around the base of a grid and to utilize different colors for the top and bottom of the grid.

Other features of the package include generation of contour maps with color-coded contour lines displayable as a function of the Z value, application program inquiry into the coordinates of a point on the surface and a three-dimensional annotated axis routine.

The package is priced at $3,000 per CPU before Feb. 15, $4,500 per CPU after Feb. 15, from 6260 Lookout Road, Boulder, Colo. 80301.

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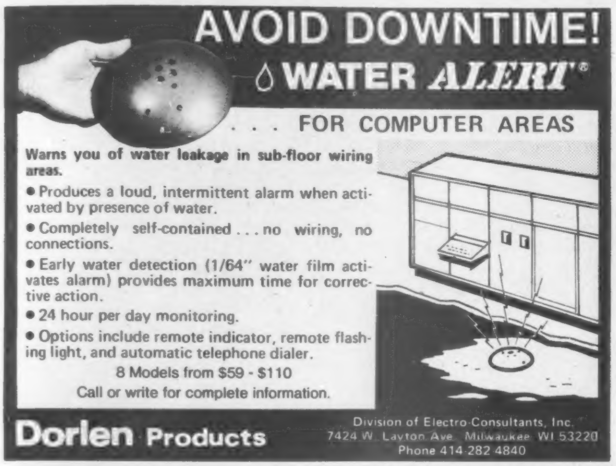

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'Vision' Project Management Available for VAX Users

FULLERTON, Calif. — Systonetics, Inc. has extended the availability of its Vision project management system to users of Digital Equipment Corp.'s VAX-11 series of computers.

Vision is said to integrate project scheduling, cost analysis, resource applications, report writing, data base management, graphics generation, color graphics and "what if" analysis. The package features over 100 formatted and menu screens in a stand-alone, remote, batch or networking environment.

Other features include unlimited projects, interactive or batch input, on-line error detection, target comparisons, resource leveling, earned-value reporting, management graphics, integrated data base management system (DBMS) and multiple output devices including a CRT terminal, printer/plotter, multicolor pen plotter and electrostatic plotter, a spokesman said. Vision also integrates a conversational DBMS with the other modules.

The basic package costs $25,000. Systonetics, Inc. is located at 801 E. Chapman Ave., Fullerton, Calif. 92631.

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Computerworld's January 31st Special Report on Data Communications Networks will give you a communications roadmap.

Since data communications are becoming more and more important in computer operations, *Computerworld's* Special Report is being designed to wrap up both long and short haul Data Communications Networks for you. You'll get a close look at the communications explosion and how users are trying to harness it.

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- Protocol conversion (including news on the new terminals compatible with IBM's 3270 -- features, applications and implementation in a local area network)
- Combining private and public switch data networks
- Designing and using national multi-user and multi-function networks
- Network management technologies and how they have evolved
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Service Provides Data Base Prop

WASHINGTON, D.C. — Information Consultants, Inc. has introduced a private and public data base service designed to provide technical support, computing and network facilities for publishers, associations, consulting and accounting firms.

Probe reportedly offers the information provider a full range of services for designing, implementing, operating and maintaining on-line custom data bases. The service — based on a Digital Equipment Corp. 20/60 computer — is said to be unique in offering the ability to customize data bases and tailor human interfaces for specific applications.

While every system is customized, a typical base line price for the development of a service is $5,000, a spokeswoman said from 2021 L St. N.W., Washington, D.C. 20036.

Spreadsheet Fits CICS-Based CPU

(Continued from Page 29)

modes. Command mode provides the main user interface to the Omnicalc application and matrix. This was intended to allow users to design screen layouts, enter data into the matrix and control the display of information. Program mode is used to enter or modify program statements. It is through these statements that the user controls the sequence of calculations. List mode was designed to facilitate the review of program statements in logical sequence.

Tower Systems plans to distribute modules with the software that will handle, for example, the software budget for a DP organization and will facilitate the "what if"-type questions that may arise.

According to Gregory K. Collins, corporate director of marketing and sales for Tower, Omnicalc is considered a "functional replacement" for microcomputer-based spreadsheet software packages. Future enhancements to the product will be geared toward increasing its end-user-friendliness and capabilities of interfacing with personal computers, he noted. It was intended primarily for more sophisticated users because it involves use of a Basic-like language to write statements to massage data.

Omnicalc is available for a monthly fee of $125 over a three-year lease, the vendor said from 19782 MacArthur Blvd., Irvine, Calif. 92715.

Report Finds Rolm 'Growing Complacent'

By Jim Bartimo
CW Staff

NEW YORK — Rolm Corp. "Is growing complacent" in its development of new products and could lose its edge against competition from Northern Telecom, Inc., Wang Laboratories, Inc. and others, according to a recently published report by a management consulting/market research firm based here.

"Rolm: A Strategic Analysis" by Northern Business Information, Inc. makes this claim by noting Rolm has used the same minicomputer-based machine in its computerized branch exchange (CBX) since 1975.

"Product development at Rolm is evolutionary," the report said. "The company's strategy in . . . its product lines is to find a good product and stick with it." A major product announcement from Rolm is not expected but improvements in the operating system, software and CBX memory are anticipated. In the long term, a digital telephone is anticipated.

Plans for the Future

In approaching the office of the future, the telecommunications company plans to be an integrator rather than a full-line supplier through its Office Systems Division. According to the report, the CBX will become a communications controller that will be able to:

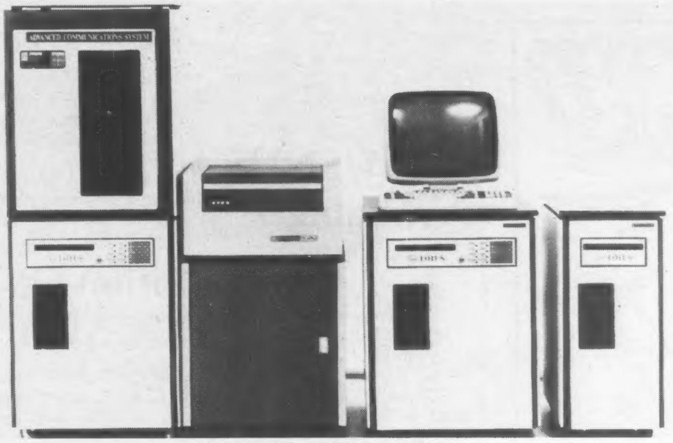
- "Integrate all communications between terminals, computers, local-area networks and office equipment from a variety of vendors on the local level.
- "Switch all voice and data calls to any location on the network through the most cost-effective route."

To maintain its annual growth rate of 30%, Rolm has a three-part strategy. The company will sell add-ons and upgrades

(Continued on Page 38)

Includes Four Interfaces

Incomnet Unveils 16-Bit Family



Incomnet's 16-Bit Lotus System

VENTURA, Calif. — A 16-bit family of computers designed for communications, distributed processing and interfacing with a variety of dissimilar networks has been unveiled by Incomnet, Inc.

The Lotus system is built around a distributed processing controller with features including a capacity of up to 3M-byte on-board memory, four communications interfaces for RS-232 and RS-422, bidirectional parallel and memory-mapped interfaces for peripherals, direct memory access and memory management addressing up to 128 independent memory segments, the vendor said.

The Basic configuration, aimed at regional communications and processing networks, includes a distributed processing controller and 256K bytes of main memory. A typical system would include disk storage, printer and distributed processing controllers for up to 24 terminals on a direct basis plus communications capability. Prices for this system start at $19,900, according to the vendor.

The Executive system includes a distributed processing controller, character and graphics controllers and a high-resolution keyboard display terminal. Options include additional distributed processing controllers, memory expansion, Winchester disk storage and a number of communications interfaces to support up to eight users. This system costs $29,900.

The Advanced Communication system is geared for international or global processing and communications networks and includes four distributed processing controllers with 1,024K bytes main memory, character and graphics controllers and a display terminal. Options include 300M-byte removable disk storage drives, a ½-in. magnetic tape drive, additional controllers, memory expansion and a number of interface and peripheral units. Costs start at $49,900 for this configuration.

The Lotus operating system can handle operations including distributed processing, communications, voice independent I/O, virtual terminals and terminal window management for simultaneous multiple views. Languages supported include Pascal, C, Ada, Cobol, Fortran and Basic, the vendor said.

The applications software such as network management and a decision support system comes with the system. Also included are office automation functions such as word processing, document filing and retrieval, time management, message delivery and document management.

Incomnet is located at 2772 Johnson Drive, Ventura, Calif. 93003.

T-76 Lets TRS-80 Talk to IBM Host

FORT WORTH, Texas — Radio Shack has announced a controller that reportedly permits its TRS-80 microcomputers to communicate with IBM hosts, operating under IBM's Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC) protocols.

The Radio Shack, T-76 Communications Controller permits the TRS-80 Model II and Model 16 microcomputers and DT-1 Data Terminals to function in an SNA/SDLC network environment, performing as IBM 3278 CRT terminals.

The Tandy T-76 provides ports for connecting up to seven devices, either by direct connection or remotely through asynchronous modems.

The T-76 communications controller is priced at $7,000.

More information on the device can be obtained from the firm's special marketing group, 1400 One Tandy Center, Fort Worth, Texas 76102.

Emulator Ties Black Box Micro To IBM 2780, 3780

SANTA CLARA, Calif. — Rair Microcomputer Corp. has announced a communications protocol emulator said to enable Rair Black Box microcomputers running under Digital Research, Inc.'s CP/M or MP/M to emulate IBM 2780 and 3780 terminals.

Bisync-80 reportedly enables a Black Box to be used as a development system linked to an IBM mainframe, utilizing standard IBM Remote Job Entry support on the mainframe.

Mainframes and remote devices supported include IBM 360, 370 and 30 series computers, 2780 and 3780 terminals, Digital Equipment Corp. PDP-11 and VAX-11 computers.

Bisync-80 costs $700 for the software and $300 for hardware modifications to the asynchronous RS-232 port, a spokesman said from 4101 Burton Drive, Santa Clara, Calif. 95050.

Smart Terminals For Editing Out

STERLING, Va. — Micro Products Co. has introduced a series of smart editing CRT terminals said to feature ergonomic design, enhanced video attributes and flexible screen formats.

The MPC 1100 reportedly emulates the Perkin-Elmer Corp. 1251 and costs $1,695; the MPC1200/1250 series said to deliver full functionality of the Digital Equipment Corp. VT/131, VT/132 and VT/125 series and costs between $1,795 and $3,495.

The MPC 2100/2150 series is an advanced color terminal for graphics and alphanumeric editing and costs between $2,995 and $4,395, the vendor spokesman said.

All of the terminals feature an expanded 14-in. nonglare screen in a housing that tilts 15° and swivels 60°. A detachable, low-profile keyboard controls such characteristics as display brightness and color, the vendor said.

More information can be obtained by contacting Micro Products, through P.O. Box 198, Rt. 634 and Acacia Lane, Sterling, Va. 22170.

Adds Users Get GEN.II Upgrade

SACRAMENTO, Calif. — Digital Engineering, Inc. is offering a fully compatible GEN.II Retro-Graphics terminal enhancement package said to allow users of Applied Digital Data Systems, Inc. (Adds) Viewpoint and Viewpoint/3A Plus alphanumeric terminals to convert to full-bit map graphics capabilities.

GEN.II reportedly features full emulation of the Tektronix, Inc. 4010 series of graphics terminals and monochromatic emulation.

A printed-circuit board assembly, it is powered by an 8-bit microprocessor and provides a screen resolution of 640 pixels by 240 pixels. Once installed, Retro-Graphics does not affect the normal alphanumeric functions of the Adds Viewpoint terminals.

The Model RG1000/AD60 GEN.II Retro-Graphics enhancement costs $1,095 from Digital Engineering at 630 Bercut Drive, Sacramento, Calif. 95814.

Modem Addition Offers Pulse, Dailing Modes

HUNTSVILLE, Ala. — Universal Data Systems, Inc. (UDS) has announced an addition to their line of low-, medium- and high-speed modems featuring both pulse and dialing modes as standard features.

The UDS 212A/D reportedly features all the capabilities of the previously released UDS 212A modem and also includes an Integral Automatic Calling Unit. The built-in firmware of the UDS 212A/D allows entry and storage of up to five 30-digit numbers or operatives, which can be recalled and executed with simple keyboard commands.

Both the UDS 212A and the UDS 212A/D are Federal Communications Commission-registered for direct connection to the public-switched telephone network and are compatible with all Bell Laboratories-type 212A data sets.

The UDS 212A/D is available for $795 from the vendor at 500 Bradford Drive, Huntsville, Ala. 35805.

Ansi-Compatible Editing Unit Introduced

ANN ARBOR, Mich. — An Ansi-compatible editing terminal has been introduced by Ann Arbor Terminals, Inc.

The Genie is said to be upwardly compatible with the firm's Ambassador, reportedly offering a low-cost alternative for the professional user.

Editing commands are implemented with pointers instead of moving data and permit the inclusion of decimal parameters for maximum editing speed, according to the vendor.

The unit costs $1,195 from the firm at 6175 Jackson Road, Ann Arbor, Mich. 48103.

'SDM/SNF' Available

FUQUAY VARINA, N.C. — Software Development and Maintenance, Inc. (SDM) has announced the availability of its automated teller machine (ATM) Shared Network Facility (SNF).

SDM/SNF interfaces directly with the firm's ATM Transaction Control System (TCS) and IBM's 3624/3614 On-Line Application and Reporting System. With modification, SDM/SNF can interface with other ATM systems, the vendor said.

The SNF interface reportedly can be tailored to support various message formats and protocols between regional and national ATM Shared Networks.

SNF runs under IBM's CICS DOS/OS product. Programs are written in Command Level reentrant assembler language. The system costs $10,000 from the firm through P.O. Box 668, Fuquay Varina, N.C. 27526.

Option Fits DCC Mux

GERMANTOWN, Md. — The Data Communications Group of M/A-Com Digital Communications Corp. (DCC) has announced a high-performance option for its statistical and switching Multiplexer product line.

The option is said to allow a user to operate M/A-Com DCC multiplexer data links at 19.2K bit/sec.

The option is available on the following models: CM9100 statistical multiplexer, SM9200 switching multiplexer, ACM9100 advanced statistical multiplexer and ASM9200 advanced switching multiplexer.

The option costs $150 from the firm at 11717 Exploration Lane, Germantown, Md. 20767.

'Complacent' Rolm Seen Losing Competitive Edge

(Continued from Page 37)

to its existing customer base; sell the CBX product line as the communications hub of the automated office and expand into foreign markets, the report predicted.

As a telecommunications company that offers its customers advanced software features and ongoing service at a premium price, Rolm could be undercut by other suppliers in the future, the report stated.

Rolm could be hit hard in these areas:

- Aggressive pricing from American Bell, Inc. and Northern Telecom, Inc.
- "Third-generation" switches, which are cheaper and more energy efficient than the CBX.
- Independent Bell Laboratories' operating companies selling cheaper products.
- Office automation vendors selling local-area networks with voice capability.

Sales of $1.4 billion will be reached by Rolm in 1987 under the most favorable conditions, the report said. But under less favorable conditions, "Rolm could still grow at 16% per year, with net sales reaching $785 million by 1987."

The report is available for $575 from Northern Business Information, 66 W. Broadway, New York, N.Y. 10007.

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December 3, 1982

CDC Expands Line Of IBM-Based Units

MINNEAPOLIS — Control Data Corp. has expanded its family of high-speed IBM-compatible impact printers, by introducing the CDC 32111-16 Fastrain printer subsystem.

This product operates at a speed of 1600 line/min, using a standard 48-char. set and is compatible with both IBM 3211 and IBM 1403 print modes, the vendor claimed. It is field-upgradable to the CDC 32111-2 Fastrain printer subsystem, which operates at a speed of 2000 line/min.

Operation of the CDC 32111-16 in either 3211 or 1403 mode is accomplished by means of an operator-selectable switch on the interface panel. In 3211 mode, the new subsystem uses programmable format load to eliminate the need for format tapes, the vendor explained. In 1403 mode, the Fastrain subsystem uses a format control buffer to read and store data from installed format tapes. Following initial transfer of data to the buffer, the format tape may be removed from the printer, the vendor said.

The CDC product was designed as a single unit with an integrated controller and attached paper stacker that reportedly requires less floor space than either of the comparable IBM products — the 1403/2821 and 3211/3811.

The new subsystem can accommodate from one- to six-part forms with dimensions from 4-in. to 20-in. wide and from 4-in. to 20-in. long. Horizontal character spacing is 10 char./in., and the operator can select vertical spacing of either six or eight line/in.

The Fastrain subsystem is priced at $57,000, which includes controller and one type array. Further details are available from the vendor through Box O, Minneapolis, Minn. 55440.

Four Packaged Systems Unveiled by DEC and VAX

MAYNARD, Mass. — Digital Equipment Corp. last week unveiled four packaged computer systems based on its VAX-11 superminicomputers, each incorporating a streaming tape subsystem introduced at the same time.

The company also announced two additional software languages designed to operate on its high-end VAX-11 computer systems.

Two of the packaged systems are built around the high-end DEC VAX-11/780 central processor; the other two use the VAX-11/750 mid-range processor. In each system, the TU80 tape subsystem is paired with one of DEC's Winchester technology disk drives, the vendor explained.

The systems are reportedly the lowest-priced VAX-11 computer systems of their class with both Winchester disk and tape facilities. They enable system designers and users needing VAX-11/750 or VAX-11/780 processing power to configure a

(Continued on Page 40)

DEC's TU80 streaming tape subsystem features a 40M-byte capacity.

For 3600 Series Tape System

STC Offers Intelligent Buffer

LOUISVILLE, Colo. — Storage Technology Corp. (STC) last week introduced an intelligent buffer for its 3600 series tape subsystems that reportedly allows data transfers between CPUs and tape drives at full channel speeds of up to 3M byte/sec.

The 4800 Tape Accelerator is a 64K-byte device that is logically located between the host CPU channel and STC 3800-IV tape control unit, to which it attaches without software modification, STC said.

The 4800 Accelerator is similar to a capability incorporated into the firm's high-end 4500 tape subsystems series, which was introduced at the National Computer Conference this year. This Accelerator is scheduled for delivery sometime during the beginning of next year.

By displacing the current protocol where one tape locks out an entire channel, the Accelerator, working under timing sequences, enables the tape subsystem to disconnect from the host channel between record transfers, freeing the channel for other uses, according to STC.

With the Accelerator installed, only command and data transfer cause a channel to be busy, STC said. In current situations, a tape drive can keep a channel 100% busy.

When the controller receives the read command, a disconnect occurs; as the buffer fills, the controller determines the optimum reconnect time based on channel and device speed and record length. For a Write command, the disconnect occurs when a full record has been written into the buffer.

The 4800 Accelerator will be available for shipment in June to users of STC's 3670 and 3650 tape drives. Its base price is $36,700. STC is located at 2270 S. 88th St., Louisville, Colo. 80027.

Grinnell's Image Processor Out

SAN JOSE, Calif. — A family of raster scan image processing, image display and computer graphics equipment aimed at a range of applications has been unveiled here by Grinnell Systems Corp.

The 2800 line consists of the 28 series for computer graphics, the 280 series for image display and enhancement and the 2800 series for image processing.

The first member of the family, the Model 2800-32, was intended for sequential processing of red-green-blue images. It features up to six 8-bit banks of 512-pixel by 512-pixel memory, with program-selectable resolutions of 512 or 480 lines and 512 or 640 pixel/line.

A video digitizer and a Motorola Corp. MC68000 microprocessor card with up to 512K bytes of memory are also available, the vendor said.

The image processor is a high-speed pipeline processor with a set of lookup tables, an arithmetic logic unit and an input stage for digitizer images with dynamic ranging and color mapping, the vendor said. The processor is programmable on a pixel-by-pixel basis and has an array of arithmetic, logical and special image processing functions.

The Grinnell Model 2800-32 Image Processing System prices start at approximately $25,000. First deliveries are scheduled for Feb. 1.

Additional information is available from the vendor at 6410 Via Del Oro Drive, San Jose, Calif. 95119.

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DEC Unveils Packaged VAX-Based Systems

(Continued from Page 39)

system costing below $100,000 and $200,000, respectively. Each packaged system can be expanded as required, the vendor added.

The TU80 streaming tape subsystem is an entry-level tape drive designed for VAX and PDP-11 computer systems that incorporate the firm's Unibus architecture. The tape system can reportedly be connected to the full line of VAX-11 machines as an add-on unit, including the entry-level VAX-11/730. The tape drive uses nine-track 1,600 bit/in. magnetic tape and has a storage capacity of up to 40M bytes, the vendor said.

The entry-level VAX-11/780 packages include a central processor with 2M bytes of ECC MOS memory, a 121M-byte RA80 Winchester disk drive, UDS50 disk controller and the TU80 subsystem, the vendor said. This package lists for $189,000.

A slightly higher costing system that includes all of the above and a 456M-byte RA81 Winchester disk drive is $199,000, the vendor said. Both systems are available in 120V/50 Hz and 240V/50 Hz versions.

The VAX-11/750 systems include CPUs with 1M byte of 64K-byte MOS memory, a UDA50 controller, RA80 Winchester disk drive and the TU80 streaming tape subsystem for $89,000. The more expensive unit with an RA81 Winchester disk drive lists for $99,000.

The TU80 itself is priced at $9,900.

All four DEC system packages come with the DEC's VMS operating system and use an LA120 Decwriter III terminal. Shipments of these bundled systems are slated for the spring.

DEC also announced an implementation of APL for its VAX-11 superminicomputers that reportedly has a theoretical work space limit of 4G bytes. This compares with the typical APL work spaces of less than 1M byte, the vendor pointed out.

Called VAX-11 APL, the software is aimed at banking, insurance, laboratory research, engineering and university environments. It features a mathematical format and was especially designed for handling tables and lists.

This product is priced at $13,800.

A new version of Pascal designed to run on DEC's line of superminis was also unveiled. Version 2 of VAX-11 Pascal is a multipass optimizing compiler, intended for scientific, industrial and educational institutions. VAX-11 Pascal Version 2 costs $7,500. DEC headquarters is located in Maynard, Mass. 01754.

Banks Running IBM 3890s Get Backup Service

ROSEMONT, Ill. — Comdisco Disaster Recovery Services, Inc. is offering an IBM 3890 remote check processing backup service for the banking community.

Comcheck was designed for banking institutions that process from 500,000 to 2,500,000 checks per day. If a breakdown occurs the firm reportedly will provide the communications link between the bank's 3890 and a Comdisco CPU.

In the event of a client bank's 3890 breakdown, the service's dial-up capability will provide the link between a reciprocal bank's 3890 and a Comdisco CPU.

All Comdisco recovery centers are equipped with full-scale IBM CPUs, peripherals and telecommunications backup equipment, in addition to adjacent "shells," or conditioned ready spaces, for long-term use.

Base price for Comcheck is $2,300/mo to back up one 3890, a spokesman said from 6400 Shafer Center, Rosemont, Ill. 60018.

Tape Controller Debuts

SAN DIEGO — Innovative Data Technology, Inc. has announced the Series 2600 tape controller, which uses "personality modules" to connect IBM tape peripherals to a variety of computer systems.

By switching personality modules, which cost about $600 each, an IBM-compatible tape peripheral can reportedly can be attached to computer systems manufactured by different vendors. The controller contains two printed-circuit cards, a magnetic tape formatter and a microprocessor-based intelligent controller. Personality modules are available to support industry-standard buses including RS-232C, IEEE-488 and an 8-bit parallel I/O bus.

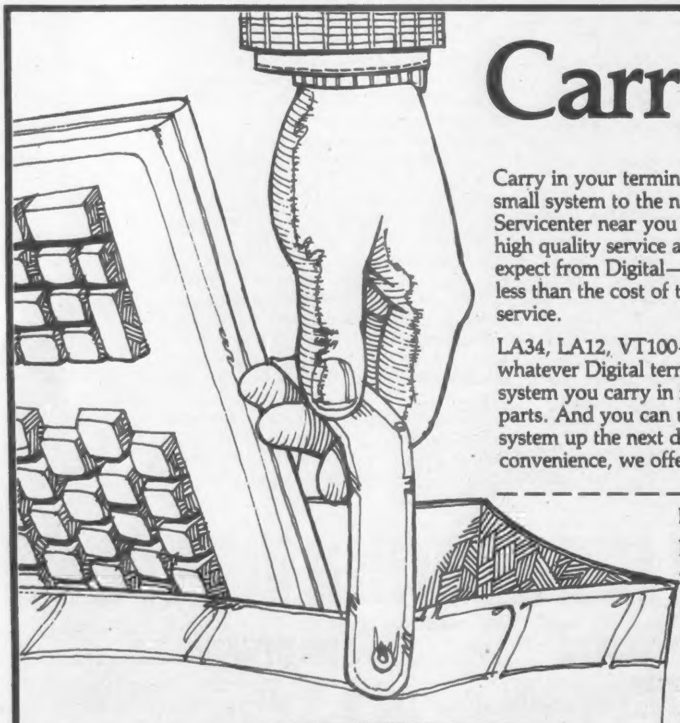
The Series 2600 costs from $2,495, the vendor said from 4060 Morena Blvd., San Diego, Calif. 92117.

Plotters Offered By Alpha Merics

CHATSWORTH, Calif. — Two flat-bed plotters priced under $5,000 have been announced by Alpha Merics Corp.

The Alphaplot I features a plotting area of 18 in. by 30 in. and the Alphaplot II has an area of 24 in. by 34 in. Both plotters feature a choice of RS-232C or IEEE 488 standard interfaces, the vendor said. Software protocols for Hewlett-Packard Co. and Tektronix, Inc. compatibility are offered.

The plotters incorporate dual Motorola, Inc. 6809 microprocessors and feature expandable 8K-byte memory buffers. Alpha Merics is located at 20931 Nordhoff St., Chatsworth, Calif. 91311.



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Dual-Port Memory Designed To Fit DEC LSI-11 Systems

LOWELL, Mass. — A dual-port memory designed to improve the performance of Digital Equipment Corp. LSI-11 systems has been introduced by Sky Computers, Inc.

The Dual Port Memory (DPM) offers up to 512K bytes that reportedly can be used as a common system memory in multiprocessor environments or as a special high-speed memory for direct memory access I/O devices.

The DPM is packaged on two quad-height boards, each of which was designed to be mounted in a separate DEC Q-Bus backplane. The system then has two LSI-11 buses — the Q-Bus and the Q'-Bus — which reportedly can simultaneously interface with the DPM.

With 512K bytes of memory, the DPM costs $4,500 from Sky Computers, Foot of John St., Lowell, Mass. 01852.

Printer Buffer Features Random-Access Printing

BALA CYNWYD, Pa. — Interactive Structures, Inc. has introduced a printer buffer whose features reportedly include random-access printing.

Pipeline is said to allow the user to select sentences, paragraphs, graphs or pictures from different programs or computers in random fashion to compose a finished document.

The unit expands from 8K bytes to 128K bytes of memory. It is said to be compatible with the firm's Pkaso Printer Interface for Apple Computer, Inc. computers or any Centronics Data Computer Corp. parallel computer/printer connection.

Pipeline comes with power supply, cabling, manual and one-year warranty. Prices range from $195 for 8K bytes to $405 for 128K bytes from 146 Montgomery Ave., Bala Cynwyd, Pa. 19004.

Multibus-Compatible Backplane Introduced for Use in Micros

DALLAS — An eight-slot multibus-compatible backplane for use in microcomputer systems has been announced by Century Computer Corp.

The backplane is in two parts: the 86-pin P1 connector system, available now, and the 60-pin P2 connector section, available in 1983. The printed circuit is constructed as a multilayer board with separate internal power and ground planes.

The signal traces are on the outside layers, both circuit side and solder side, reportedly offering "extremely good" electrical characteristics.

The backplane was designed to be plug-connected to a second mother card so that a 16-slot cage can be built up.

The multibus backplane costs $1,500 from the firm at 14453 Gillis Road, Dallas, Texas 75234.

Hard Disk Controller Unit Out for S-100 Based Systems

GARDEN GROVE, Calif. — Advanced Digital Corp. has announced a hard disk controller for S-100-based systems.

Called the HDC-1001, the unit reportedly can control up to four 8-in. or four 5¼-in. hard disk drives.

The unit has built-in data separation features and data transfer rates up to 5M byte/sec, the vendor said.

The price of the HDC-1001 controller is $500. Advanced Digital Corp is located at 12700 B Knott Ave., Garden Grove, Calif. 92641.

Offers Dual Processors

CPM-Based Micro Debuts

TREVOSE, Pa. — Delta Data Systems Corp. has unveiled an upgraded version of its TC2830 II microcomputer system, which was designed to provide corporate and local data processing as well as a full range of business computing capabilities.

The new Micro Manager is a Digital Research, Inc. CP/M-based system featuring dual processors.

The system reportedly communicates with mainframe computers, and its built-in CP/M board allows it to run a variety of data processing programs as part of a network or independently, either at the local level or while under the control of the corporate DP manager, the vendor said. Examples of the system's capabilities are word processing, electronic spreadsheets and data base management.

The product supports a range of peripherals including 8-in. dual floppy disk drives with 2.4M bytes of storage as well as dot matrix and letter-quality printers.

Networking systems utilizing 10M- to 40M-byte Winchester hard disk technology can be established for distributed data processing as well as on-site and remote locations, the vendor spokesman explained.

The Micro Manager is base priced at $7,495. The vendor is located at 2595 Metropolitan Drive, Trevose, Pa. 19047.

Ink-Jet Dot Matrix Printer Out for Desktop Micro Users

ANN ARBOR, Mich. — Irwin Olivetti, Inc. has introduced a small and reportedly noiseless ink-jet dot matrix printer for desktop microcomputers.

The JP101 operates at speeds up to 80 char./sec and features dry ink technology, according to the vendor. The printer consists of a single printed-circuit board, a power supply and the mechanical assemblies for head and paper movement. It comes with a standard 8-bit parallel interface, with optional RS-232C or current loop interfaces.

The printer handles roll paper 8½-in. wide and fanfold paper 8-in. to 9-in. wide. The JP101 measures 15-in. wide, 10-in. deep in 4½-in. high, a vendor spokesman said.

This product costs $499 and is slated for availability in the second quarter of next year.

Further details can be obtained from 2000 Green Road, Ann Arbor, Mich. 48105.

Vectrix Unveils VX Series Based On 8088 Micros

GREENSBORO, N.C. — Vectrix Corp. has announced the VX series, a color computer graphics system based on Intel Corp.'s 8088 microprocessor.

Features include 672 pixel by 480 pixel resolution, eight simultaneous colors, three-dimensional vector graphics with rotation, scaling, translation, perspective, clipping, viewport, polygons and filled polygons. Other features include high-speed hardware generation of lines, arcs and multiply and divide functions, the vendor said.

An entry-level VX128 costs about $1,995. The high-end VX384 costs $3,995. The vendor said both systems are compatible with virtually any processor. The vendor is located at 700 Battleground Ave., Greensboro, N.C. 27401.

MT80 Interfaces Up to Eight Drives

WALTHAM, Mass. — Cormark Corp. has announced a ½-in. magnetic tape controller that reportedly provides a direct memory access interface for up to eight tape drives.

The MT80 is available in seven- or nine-track nonreturn-to-zero inverted or dual-density operation, the vendor said. It reportedly is compatible with all standard recording densities up to 1600 bit/in., and can accommodate tape speeds of up to 125 in./sec and record lengths up to 4K bytes.

A software support package is available, including Digital Research, Inc.'s CP/M operating environment, Intel Corp.'s RMX 80 or Isis drivers, tape and file handlers and system diagnostics.

MT80 comes with interface cables and full maintenance documentation. It is priced at $1,295, and further details can be obtained from Comark Corp. at 257 Crescent St., Waltham, Mass. 02154.

Disk Controller DEC-Compatible

SANTA ANA, Calif. — Emulex Corp. has announced the SC03, a disk controller for Digital Equipment Corp. LSI-11-based systems.

The unit reportedly allows users to attach large Storage Module Drive-type disk drives to DEC Q-bus systems. It provides software transparency and media compatibility with DEC's RM02, RM05 and RP06 disk subsystems.

The SC03 can be used on systems with disk drives offering between 80M- and 675M bytes of storage, the vendor said.

The SC03 disk controller is priced at $2,800, the vendor said. Emulex is located at 2001 E. Deere Ave., Santa Ana, Calif. 92705.

Disks Fit Apple III

CUPERTINO, Calif. — Apple Computer, Inc. has announced two high-density floppy disk products that provide mass storage options for the firm's Apple III microcomputer.

Called Unifile and Duofile, the units contain disk drives in single and double configurations.

Each drive provides 871K bytes of on-line storage and contains a newly announced 5¼-in. floppy media containing 62½ track/in., the spokesman for the firm said.

Unifile costs about $1,000 and Duofile costs about $1,700, the firm said from 20525 Mariani Ave., Cupertino, Calif. 95014.

Additional Storage Offered For TRS-80 Desktop Units

FORT WORTH, Texas — Radio Shack is now offering users of its TRS-80 Model I and Model III desktop computers the ability to expand disk storage by up to 20M bytes with high-speed Winchester technology hard disk drives.

These products feature large capacity and high-speed operation, according to the vendor. A primary 5M-byte hard disk drive, including an enhanced operating system language, is available for $2,495. As many as three secondary 5M-byte drives can be added to a single TRS-80 Model I- or III-based system, each available for $1,995, the vendor said.

The disk drives are available at most Radio Shack stores. Further details can be obtained from Radio Shack at 1800 One Tandy Center, Fort Worth, Texas 76102.

Eight-Slot Multibus Bows

DALLAS — Century Computer Corp. has designed an eight-slot multibus for use in microcomputer systems.

This product is comprised of two parts: the P1 connector section and the P2 connector section. This dual design is said to offer the following electrical characteristics: distributed capacitance between power and ground, low impedance across power and ground, maximum separation of signals to reduce cross-talk and maximum-width signal traces resulting in lower impedance.

This product costs $1,000, and further details are available from the vendor at 14453 Gillis Road, Dallas, Texas 75234.

Line of UPS Products Debut

HIGH BRIDGE, N.J. — Computer Power, Inc. has introduced a new line of uninterruptible power supply (UPS) products here.

The UPS-36-Series reportedly will act as a line conditioner, provide isolation and filter against noise and fluctuations when the utility line is available. In the event of line brownout or blackout, UPS will convert to battery without interruption.

This unit is suitable for applications such as point-of-sale terminals, small computers and command security systems. Either 10-year-long file lead acid or sealed gel cell batteries are provided.

Prices start at $1,405, the vendor said from 124 W. Main St., High Bridge, N.J. 08829.

Interface Out For Intel ISBX

DALLAS — Century Computer Corp. has introduced the Flexible Disk Interface, a printed-circuit card that plugs into an 8-bit Intel Corp. ISBX connection on an Intel Multibus-type processor or interface.

Designed for use on the vendor's Vanguard microprocessor, the interface is said to be ISBX-specification-compatible. Both 5¼-in. and 8-in. flexible disk drives are supported — single- or double-sided, single- or double-density.

Up to four drives may be attached, in any combination, as long as each has a unique unit select number, according to the vendor. Price of the unit is $1,600 from the firm at 14453 Gillis Road, Dallas, Texas 75234.

Control Systems Target Apple IIs

BOSTON — A family of measurement and control systems designed for Apple Computer, Inc. Apple II microcomputers has been introduced by Data Acquisition Systems, Inc. (DAS).

Series 500 systems reportedly are fully modular and may be expanded through the firm's I/O module library. All systems accept up to 12 modules in any combination.

Capacity may be expanded to 336 channels of 12- or 14-bit analog-to-digital single-ended input, to 168 channels of differential input, to 60 channels of 12-bit digital-to-analog (D/A) output with 2½ µsec conversions, to 24 channels of D/A output with 16-bit precision, to 192 channels of digital I/O or to 192 channels of ac and dc power control.

Comprising four models, the series carries a base price of $2,700, with I/O modules priced separately. DAS is located at 349 Congress St., Boston, Mass. 02210.

Dyson Announces Flexible Diskette

SANTA CLARA, Calif. — Dyson Corp. has announced a 3¼-in. flexible diskette said to have a storage capacity of 1M byte.

The 3¼-in. Flex Diskette is reportedly compatible with the Tabor Drivette and Seagate Technology Corp.'s 3¼-in. diskette drives. The Dysan disk reportedly has the capacity to store the same amount of data as a 5¼-in. diskette using one-third the area.

This product retails for $5, the vendor said from 5440 Patrick Henry Drive, Santa Clara, Calif. 95050.

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Operating 17 Facilities

Insurer Cuts Costs With In-House WP

NEW YORK — At least 95% of the insurance contracts typeset at USLife Corp. that used to be sent outside are now handled in-house with no sacrifice in quality and with time saved in personnel costs.

USLife Corp., which has acquired 31 companies and formed seven others in the last 15 years, is among the more aggressive insurance companies to tap the potential of word processing. With 17 operating facilities, the company has a constantly increasing need for word processing.

"I prefer to call it information processing," said Noel J. Lutkowski, second vice-president for administrative support of the United States Life Insurance Co., a subsidiary of USLife. "We're doing a lot more than manipulating words; we actually are processing information."

The USLife strategy depends mainly on new products, but the problem is that every one of these new products appears as words on paper. This unavoidable circumstance places a heavy and ceaseless work load on those people at USLife responsible for the actual production of the products.

Meanwhile, an extraneous factor makes the insurance industry unique. By law, the basic product — the insurance contract — must be approved in its form and content by regulatory agencies in the capitals of all 50 states. This means that any single document could be subject to 50 revisions.

The demand for new products and the increasing strictures by regulatory authorities made it imperative for USLife to discover a modern way to integrate its word processing and typesetting functions into a single system, Lutkowski said.

After a thorough investigation of systems available on the market, USLife was convinced that Wang Laboratories, Inc. could furnish a complete system to meet their needs, Lutkowski said. In the summer of 1981, Wang delivered its Office Information System (OIS)/140 to the company. Included in the package was a typesetter, a CPU, a disk drive, six CRT terminals and three printers.

The company anticipates savings of at least $30,000 in typesetting costs alone during the first year with the new Wang system. "I know we'll do even better than that," Lutkowski said, "but it is hard to be precise. The Wang system has enabled us to do many new things without having to add more people to our operating staff.

"Initially, some bugs had to be ironed out of the system after it was installed," Lutkowski said, "We always knew the potential of the system was there. The problem was that we weren't able to do everything we wanted from the first day. But the service and support staff from Wang worked very closely with us, and it wasn't too long before everything was flowing smoothly."

USLife also uses the OIS word processing capabilities to produce letters, manuals, charts and tables, speeches and marketing proposals. Using the Basic language capability of the system, the company also plans to utilize the OIS for personnel records management and as the basis for an updated purchasing and inventory control system.

Letter-Quality Printer Fits 3270

ANN ARBOR, Mich. — Interface Systems, Inc. has introduced a letter-quality printer said to be IBM 3270 plug-compatible. It also offers a standard tractor and friction feed and an optional dual-sheet feeder.

The Model ISI 736 is said to be ideal for on-line word processing requiring solid character, letter-quality output. It offers interchangeable print fonts and use of either 10 or 12 pitch printing. It supports 15 different foreign languages, a vendor spokesman said.

The unit price for the printer is $5,150, and it is available from Interface Systems, 462 Jackson Plaza, Ann Arbor, Mich. 48103.

Printer/Plotter Out For Film or Paper

SANTA CLARA, Calif. — Versatec, Inc. has announced a multimedia electrostatic printer/plotter said to produce hard copy on film as well as paper.

The V-80F enables the production of transparent overlays, overheads and photocopy masters direct from computer or terminal display. Primary applications include printed circuit and mechanical design, geophysical plotting, page layout and photocopy masters for publication, scientific analysis, business graphics and computer animation, the vendor said.

V-80F printer/plotters are priced from $9,950. The vendor is located at 2710 Walsh Ave., Santa Clara, Calif. 95051.

MSA Software Aids Users of Micros Running On CP/M

ATLANTA — Management Science America, Inc. (MSA), the parent company of Peachtree Software, Inc., has introduced a set of desktop applications for the IBM Personal Computer and other micros running under Digital Research, Inc.'s CP/M operating system.

The software features a direct link to MSA mainframe packages for the IBM 4300, 30 series and IBM machines running the OS/DOS operating system. It is said to allow managers and executives to create and manipulate data on a Personal Computer and then pass it along or merge it with files on a mainframe computer.

Peachpak applications reportedly include: Peachcalc, an electronic spreadsheet for modeling, analysis and row/column calculations; Business Graphics System, a full-color graphics package with a plotting option; Telecommunications, which allows direct communications with other microcomputers and data bases, Peachtext, a word processing package; List Manager, a minipersonal data base; and Peachlink, a link to MSA mainframes.

Peachpak is available Jan. 1 with all MSA systems, including general ledger, human resources, accounts payable and receivable. It costs $3,750 with minimum orders in quantities of eight. More information is available from MSA, 3445 Peachtree Road N.E., Atlanta, Ga. 30326.

Wang Users Get WP Training Aid

WEST ACTON, Mass. — Verbatim Processing, Inc. has introduced a self-paced training package for glossary and decision processing applications of Wang Laboratories, Inc. word processing systems.

The Verbatim Processing Glossary Tutor consists of a diskette that was designed to run on any Wang Office Information System (OIS), word processing or VS operating system-based data processing system, and a 189-page user manual. The training course requires student interaction through questions and answers on work-related exercises and includes advanced glossary applications, a spokesman said.

The training package is available for $400 from the vendor at 438 Hill Road, P.O. Box 569, West Acton, Mass. 01720.

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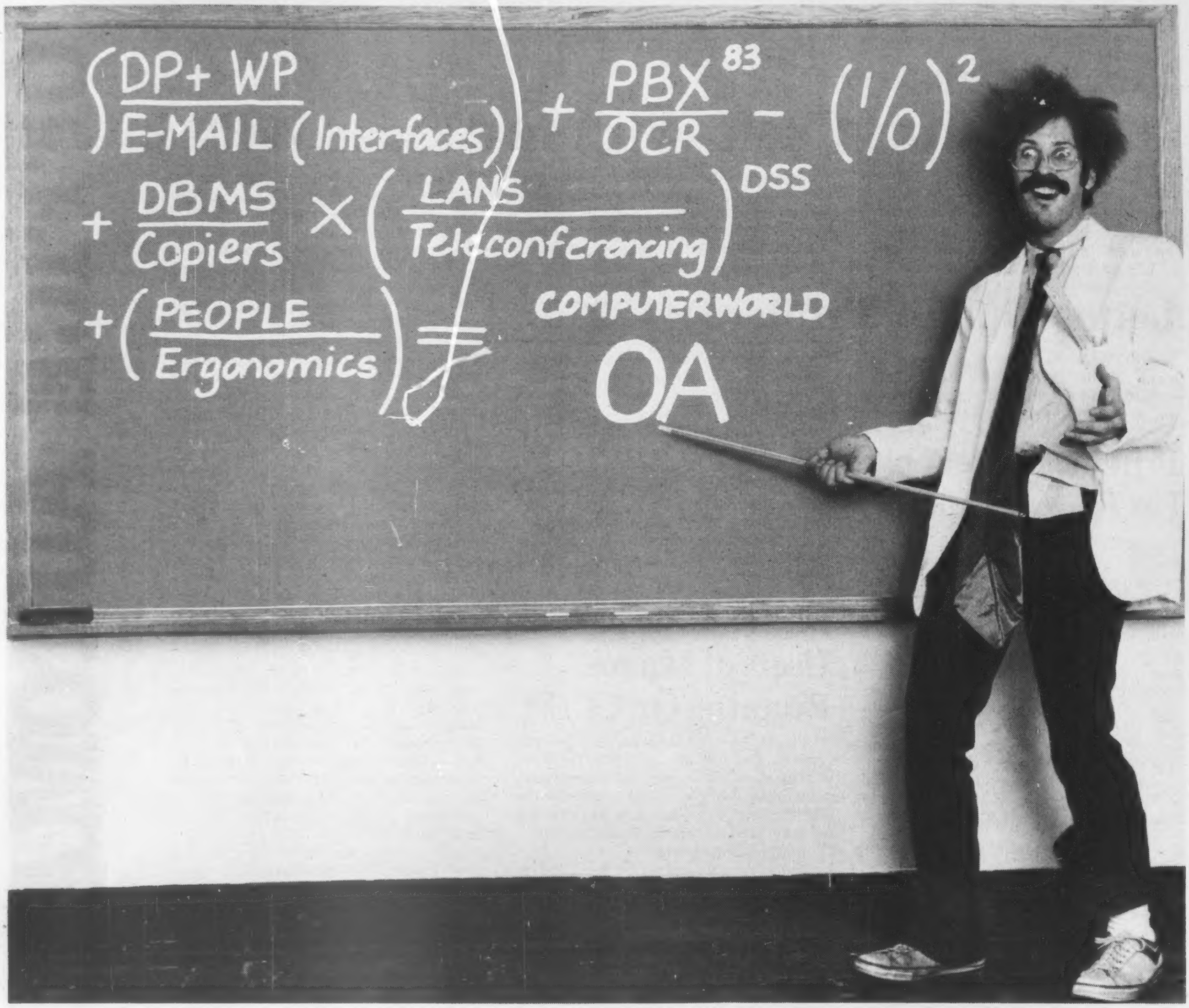

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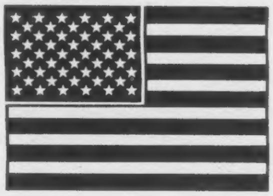
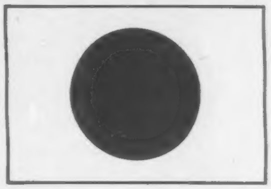




By Robert Batt
CW West Coast Bureau

PALO ALTO, Calif. — The outcome of the race between U.S. and Japanese manufacturers for semiconductor predominance will determine which country will attain industrial supremacy, an audience at Stanford University was told here recently.

Daniel Okimoto, professor of political science at Stanford, said there is some question whether the U.S. high-technology industry will suffer the same fate at the hands of the Japanese as have the steel and automobile sectors.

"We are playing for very high stakes. The side which wins the race in semiconductors is going to be in a very strong position across a whole range of industries, including telecommunications and computers," he said.

Okimoto argued that U.S. manufacturers have a lot to complain about. Japan, he asserted, is raising the walls of trade protectionism. Meanwhile, close cooperation between the Japanese government and industry makes life very difficult for small and medium-size U.S. semiconductor firms trying to do business in Japan.

Okimoto said that reputed capital cost advantages reaped by Japanese vendors result from the regulation of the capital market by Japan's Ministry of Finance and the Bank of Japan. This has resulted, Okimoto continued, in an insular situation for the Japanese vendors exclusively.

"Some of the deficiencies in the Japanese capital market have been deliberately left uncorrected in order to maintain Japanese industrial supremacy. The Japanese have an unwillingness to engage in vigorous fiscal spending and this leads to a distortion in the yen/dollar exchange rate," Okimoto maintained.

Replying to Okimoto's thesis, Keiske Yawata, president of NEC Electronics U.S.A., Inc., said that while large Japanese companies have advantages in capital

(Continued on Page 46)

IBMer Eyes Dramatic Changes In Third-Party Distribution

By John Whitmarsh
CW Staff

LAS VEGAS — Dramatic changes have taken place in third-party channels of computer distribution over the past two years, and further changes can be expected in the years ahead.

"There has been more and more pronounced use of resellers who add value to products at the $25,000 level and below," according to Gabe P. Fusco, director of sales distribution channels with IBM's Information System Group.

At the same time, manufacturers are making organized efforts to seek out, find, qualify and use value-added remarketers

(Continued on Page 48)

Senators, Vendors Trade Advice

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The sales presentation was a familiar one, with the customer worrying aloud about reliability, compatibility, security and user training, while the vendors extolled their user-friendly, integrated and expandable systems. The difference was the setting, as well as those present in the ornate, chandeliered room.

The pitchmen were high-level executives of some of the nation's largest DP and telecommunications companies. And seated across the table from them in the hearing room of a U.S. Senate office building sat ranking members of a Senate committee.

The occasion was a hearing earlier this month of the Senate Committee on Rules and Administration, which oversees Senate management and services, including such different functions as the assigning of members' office space and deciding on office automation requirements. The committee was seeking DP/telecommunications industry advice as the Senate

(Continued on Page 52)

Harris to Sell Non-DP Printing Business

By Bill Laberis
CW Staff

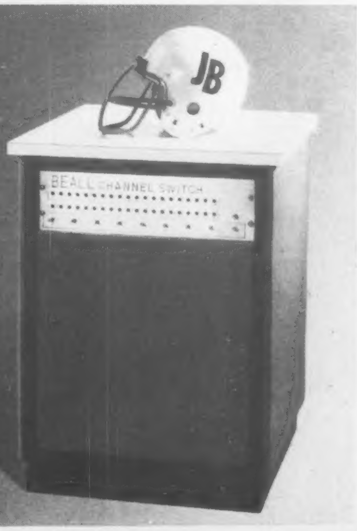
MELBOURNE, Fla. — Harris Corp. has forged an agreement with an investor to sell its noncomputer printing business, yielding $250 million that the company said it will spend on its electronics and information operations.

Company officials declined to state more specifically how the proceeds of the cash sale will be used, although the general feeling among analysts is that Harris will use the funds to bolster research and development efforts across all product lines, communications equipment in particular.

"It's a sizable lump sum they'll have to play with, and they have any number of areas where they can spread it around," one industry observer noted. "I'm quite certain they know what they'll do with the money, but it's a mystery to me."

Aaron Goldberg of the International Data Corp. said, "It is hard to say which product line will get the most benefit," also noting that Harris has a full range of products — from minicomputers to com-

(Continued on Page 52)



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Over Nine Months

U.S. DP Trade Surplus Down

WASHINGTON, D.C. — Despite a modest 3% increase in exports in the first nine months of 1982, the U.S. registered a $4.9 billion trade surplus in computers and business equipment over the same period, according to the Computer and Business Equipment Manufacturers Association (Cbema).

The surplus represents a 6% decline over the same period last year, largely due to a 22% increase in computer-related imports. Computer-related exports in this period totaled $8.1 billion, compared with imports valued at $3.2 billion.

Japan continued to build on its trade surplus with the U.S., with its $1.5 billion U.S. export figure representing a 27% hike over the the first nine months of 1982, Cbema said. U.S. exports to Japan in this period reached $685 million, creating the Japanese surplus of $900 million, a 46% gain over 1981.

The lion's share of the U.S. surplus in computer equipment exports came from trade with Western Europe.

Hong Kong Sets Up Tech Office

SAN FRANCISCO — An industrial promotion office designed to attract major U.S. technological manufacturers to Hong Kong has been set up here by the Hong Kong Industry Department.

The opening is reportedly part of an ongoing process of presenting the British crown colony as a sound route for U.S. investment, according to Robert Ashworth, principal consultant to Hong Kong's government. Also, it was established here because of the its proximity to Silicon Valley.

At a press conference to open the new office, Alex Purves, Hong Kong's acting director of industry, said the Hong Kong government is interested more in attracting sophisticated management and technology than in attracting foreign capital.

"The next few decades will see Asia and the entire Pacific Basin become even more dominant in the worldwide economy," he said.

Currently 44% of total overseas investment in Hong Kong comes from the U.S., much of it in electronics.

Professor: Chips Key to Industry

(Continued from Page 45)

availability and high-volume production, they lose some of this advantage in being less flexible and having longer product turnaround than the smaller manufacturers.

Thus, Yawata concluded that the best course the small U.S. chip manufacturers in Japan should chart is to remain relatively small, while maintaining custom design techniques and utilizing resources effectively.

Okimoto said the future security of the Western Alliance is riding on the economic competition between Japan and the U.S. This can be attributed to the key role played by microelectronics in maintaining the qualitative edge of U.S. defense weapons compared with those of the USSR. Yawata countered by saying that the flow of information out of the U.S. is a purely economic conflict.

Yawata argued further that low-interest loans are available to U.S. companies as well, providing the factory is built in Japan and manufacturing takes place there.

Okimoto concluded: "There needs to be a multilateral understanding of what is fair and unfair in international trade. In the long term the liberalization of the Japanese capital market is an important prerequisite for eliminating friction between the two countries."

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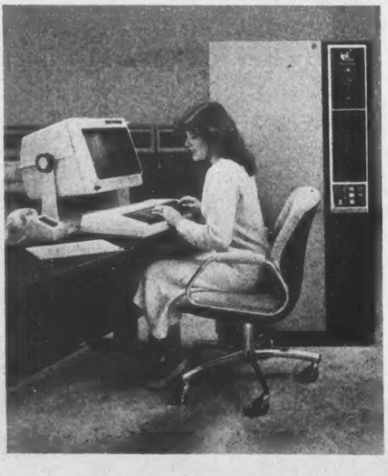

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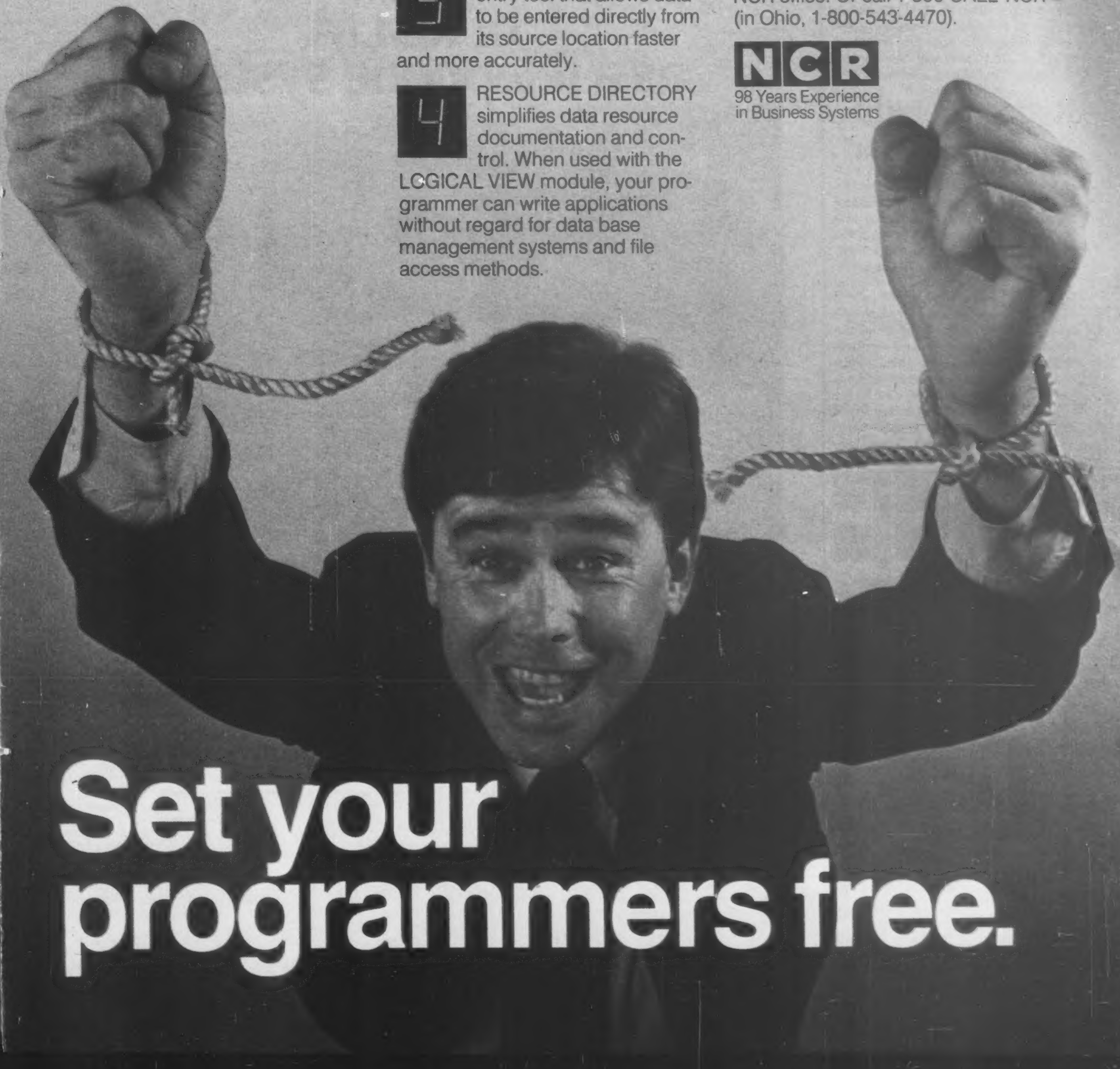

IBM Seeking New Options for Distribution

(Continued from Page 45)

(VAR) that measure up to their increasingly exacting standards, Fusco explained in a recent interview here.

"Manufacturers want to expand their distribution channels and programs, but they also want to control their own destinies. We're trying to find and cultivate the best of the breed," Fusco said.

The reason, he added, "is because end users are requiring more value added to the systems they buy. The end user wants more than just hardware dropped onto the loading dock. He wants the appropriate software, training and support. He wants more content."

The push from vendors and the demands from end users mean it will become more difficult for resellers to qualify, in Fusco's view.

IBM, for example, looks for "substantial businesses with expertise in specific applications areas that will complement the general marketing thrust of the company such as vertical banking or insurance," Fusco explained. IBM currently has "several hundred" carefully selected VAR, which enhance IBM products with their own hardware or software and remarket the combined products to end users who are not affiliated with the remarketer.

IBM's Program

Under IBM's program, which began in 1981, VARs market the IBM Datamaster small business computer and the Series/1 minicomputer. Last week the company began marketing its Displaywriter desktop word and data processor and its System/34 small business system to selected VAR, Fusco said. For the Displaywriter and System/34, remarketers that have been accepted into the VAR program purchase the equipment from IBM under special price schedules and terms. No VAR, however, markets the IBM Personal Computer.

Fusco estimates the number of resellers currently doing business at 2,500 to 3,000, a figure he believes has held relatively constant over the past five years. Though he does not foresee an increase in actual numbers, he does expect "lateral growth" in the reseller industry.

"By 1985, the numbers will remain the same, but more and more companies will move into the bottom of the reseller market," Fusco indicated.

"The industry will grow laterally because the mix of companies will change from 10% to 15%. Little companies will become bigger companies or they will merge, opening up room at the bottom for new little companies," he said.

For management information systems (MIS) managers, such changes in the reseller market will require that they become more aware of the variety of solutions available to do the job, Fusco said. He estimated that 75% to 80% of medium-size and large companies have acquired systems or products through some kind of reseller that has added value to the products, yet many MIS chiefs aren't aware of that fact. As a result, users of those systems within companies know more about the manufacture and support of those products than do the MIS executives who probably bought them.

Report Details Bank DP Costs

MOUNTAIN VIEW, Calif. — Spending by the banking industry for computer services will reach $6.4 billion by 1986, up 140% over 1982 expenditures of $2.7 billion, according to a new study from Input, Inc.

Called *New Processing Opportunities in Banking*, the report analyzes the overall market for computer services spending by banks and describes the fastest growing processing application areas. It also details those applications most likely to be moved inhouse in the near future.

The report costs $2,000 from Input at 1943 Landings Drive, Mountain View, Calif. 94043.

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At Dexpo West '82

DEC-Compatible Vendors Seen Holding Ground

By Jeffry Beeler
CW West Coast Bureau

ANAHEIM, Calif. — The Digital Equipment Corp.-compatible hardware and software vendors will continue to survive and prosper, no matter what steps DEC takes to combat the copycats, according to Lawrence Hollander, Expoconsul International, Inc.'s president.

"There's still enough room in this industry for all of us," Hollander said recently during Dexpo West '82, the second national exposition for DEC replacement product vendors. "Some of us will succeed and others may fail, but I can't conceive of DEC, IBM or anyone else, for that matter, completely eliminating entrepreneurs who provide good products and sound management."

Hollander's remarks came during an opening-day Dexpo press conference during which he presided over a panel of four observers of the DEC-compatible systems business. The panelists included Chris Codrington, managing director of Interco Business Consultants Ltd.; Arthur Coston, president of Applied Information Systems, Inc.; Sonny Monosson, publisher of "Monosson on DEC"; and Ken O'Mohundro, founder and president of Able Computer, Inc.

Although DEC dwarfs its plug-compatible competitors' size and industry influence, the company is unlikely to dislodge imitators from their traditional market niches, Hollander predicted. In theory, DEC could squash many long-time competitors merely by trimming its existing prices. But in practice, the price cuts would have to be so large that the company, in effect, would be "slashing its own throat," according to Hollander.

"The penalty that DEC would have to pay to gain just an additional 3% to 5% market share would be horrible," Hollander added.

Because DEC's research and development efforts are typically time-consuming, competitors should have a fairly easy time keeping one step ahead of the Maynard, Mass.-based systems supplier, he predicted.

On the other hand, Monosson countered, DEC-compatible systems companies will still have to make sure they remain more "agile" than their industry leader. The reason competitive nimbleness will be so important is that DEC has recently shown increased signs of wanting to "get into everything," he said.

To support his contention, Monosson pointed to public statements recently attributed to Kenneth Olsen, DEC founder and president. About two months ago, during the company's annual stockholders meeting in Boston, Olsen reportedly expressed a strong desire to expand his firm's activities into many new areas.

For the moment, at least, most of Olsen's dreams of expansion are effectively being held in abeyance by limitations in DEC's capital, personnel and other critical resources. "To do everything that DEC would like to do, it would have to be a $30 billion company, not just a $4 billion company," Monosson said.

Earlier during the same press conference, Applied Information's Coston voiced confidence that DEC would eventually evolve into a software publishing house. Coston foresees the day, for example, when the firm will acquire software from third-party suppliers and then market the programs alongside its existing hardware.

IDC Announces Vendor Service

FRAMINGHAM, Mass. — International Data Corp. (IDC) has announced a market research service for communications vendors.

Communications Industry Research will serve as a two-tiered service for the industry, with special-focus subscribers able to select from any of the following main areas: telecommunications (key systems, private branch exchanges and digital switching); data communications (modems, multiplexers, net control, switches and communications processors); or transmission/net services (local and private networks, X.25 protocol, microwave and satellite).

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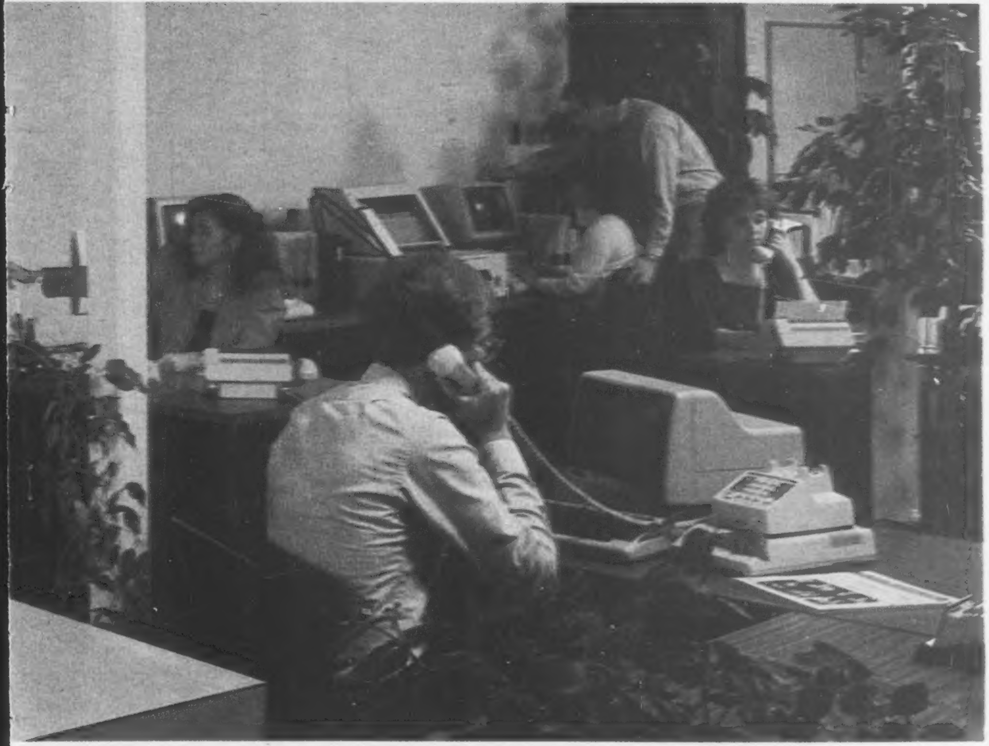

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Export Act Hearing Stresses Free Trade Flow

By Robert Batt
CW West Coast Bureau

SUNNYVALE, Calif. — Maintaining technological superiority in the U.S. will depend as much on continued technical advancement as on preventing technical data from getting into enemy hands, a senior educator said here recently.

David Wilson, executive assistant to the president at the University of California, said it is necessary for the U.S. to balance concern for protection of data against the drive for scientific progress.

Addressing a public hearing on the Export Administration Act of 1979, Wilson, who is also cochairman of the Working Group on Export Controls of the Department of Defense University Forum, said stringent controls on the exporting of technology can be costly.

Flow of Information

Technical advance, he contended, depends on an active, free flow of scientific information and on the education of scientists and engineers. Efforts to prevent loss of data suggest control of technical data and people.

At the hearing, sponsored by the Department of Commerce, Wilson said: "The Export Administration Act or other legislation purporting to control critical technologies should recognize the need to define carefully technical data that needs control.

"The legislation should recognize that the kind of controllable technical data that will occur in academic and scientific research situations are those that are associated with rapidly developing technologies where the time from basic science to application is short," he said.

The Export Administration Act establishes the export control policy of the U.S. It contains the statutory authority for regulating and controlling exports and has come under frequent attack from some computer manufacturers for being unnecessarily restrictive in allowing them to trade with the Soviet Bloc.

"For practical purposes," Wilson said, "research on such technologies and associated technical data will be substantially included in government or industry contract research. Therefore, effective, sensitive and restrained controls on both participation of foreign nationals and dissemination of information can be implemented by contract in the limited number of instances where necessary," he added.

Also testifying at the hearings, Arthur Downey, a partner in the Washington, D.C., law firm of Sutherland, Asbill & Brennan, criticized the present Export Administration Act for the power it gives the president.

The act, he said, "provides the president with a hair-trigger weapon at his unfettered disposal for instant use at any time he wishes to show displeasure at the actions of any foreign government."

Downey argued that the president should not have authority to prohibit or inhibit exports for foreign policy reasons in the absence of an emergency.

Wilson echoed those sentiments, adding it is not in the interest of the U.S. for the president to have carte blanche export authority.

The present act expires on Sept. 30, 1983, and public hearings are currently being held across the country in advance of a congressional review of the act early next year.

Study Explores Color CRTs

WELLESLEY, Mass. — The expanding alphanumeric CRT terminal market will be heavily impacted by color terminals in the near future, according to a recent study conducted by Venture Development Corp.

The Alphanumeric CRT Terminal Industry III: A Strategic Analysis predicts that 65% of the U.S. alphanumeric CRT terminal manufacturers will offer color terminals by 1986. Only 7.7% of these manufacturers have expressed no intention of getting into the color market segment, the report stated. Color terminals will be used for new applications such as computer-aided education.

This study is priced at $2,790 from Venture Development at 1 Washington St., Wellesley, Mass. 02181.

Mergers & Acquisitions

Roseburg Lumber Co. will sell its telecommunications subsidiary, **Ford Industries, Inc.**, Clackamas, Ore., to **Conrac Corp.**, Stamford, Conn., for an undisclosed amount of cash.

NSA, Inc., Cherry Hill, N.J., has acquired **Interactive Information Systems, Inc.**, Reading, Pa. Terms of the acquisition were not disclosed.

Control Data Capital Corp. has placed a $250,000 software order and has purchased 21% of the capital stock of **Star Computer Systems,** Torrance, Calif.

Noakes Data Communications, Inc. has acquired the assets of **Envax Corp.**, Irving, Texas, and has formed **Envax Systems, Inc.**, a wholly owned subsidiary. Envax Systems will continine to use the Envax brand name.

Cumberland Software, Inc., Atlanta, has acquired the software, customer base and certain other assets of **Programmed Closing Systems, Inc.** of Atlanta.

Kendata, Inc., Stamford, Conn. has purchased **M/A-COM, Inc.'s** subsidiary, **M/A-COM Office Systems, Inc.** to operate as a wholly owned subsidiary.

CM Technologies, Inc. is acquiring **Netcom Products, Inc.** of Sunnyvale, Calif. The peripherals manufacturer will become a CM Technologies subsidiary.

United Telecommunications, Inc. has acquired **Market Information, Inc.**, Kansas City, Mo.

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December 13, 1982

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PURCHASE PLAN • 12-24 MONTH FULL OWNERSHIP PLAN • 36 MONTH LEASE PLAN

	DESCRIPTION	PURCHASE PRICE	PER MONTH 12 MOS	24 MOS	36 MOS
*DEC	LA34 DECwriter IV Forms Ctrl.	$1,095	$105	$ 58	$ 40
	LA100 Letter Printer RO	1,995	190	106	72
	LA120 DECwriter III KSR	2,295	220	122	83
	LA120 DECwriter III RO	2,095	200	112	75
	LA12A Portable DECwriter	2,950	280	155	106
	VT100 CRT DECscope	1,695	162	90	61
	VT101 CRT DECscope	1,195	115	67	43
	VT125 CRT Graphics	3,295	315	185	119
	VT131 CRT DECscope	1,745	167	93	63
	VT132 CRT DECscope	1,995	190	106	72
	VT18XAC Personal Computer Option	2,395	230	128	86
TEXAS INSTRUMENTS	TI745 Portable Terminal	1,595	153	85	58
	TI765 Bubble Memory Terminal	2,595	249	138	93
	TI940 CRT	1,795	173	96	65
	TI785 Portable KSR, 120 CPS	1,795	173	96	65
	TI787 Portable KSR, 120 CPS	2,195	211	117	80
	TI810 RO Printer	1,695	162	90	61
	TI820 KSR Printer	2,195	211	117	80
LEAR SIEGLER	ADM3A CRT Terminal	595	57	34	22
	ADM5 CRT Terminal	645	62	36	24
	ADM32 CRT Terminal	1,165	112	65	42
C-ITOH	CIT-101 CRT	1,525	147	82	55
	CIT-161 Color CRT	2,675	257	143	97
	CIT-427 Color Graphic CRT	3,095	297	165	112
TELEVIDEO	910 CRT Terminal	650	62	36	24
	925 CRT Terminal	850	82	46	31
	950 CRT Terminal	1,075	103	57	39
NEC SPINWRITER	Letter Quality, 7715 RO	2,695	259	144	98
	Letter Quality, 7725 KSR	3,195	307	171	115
GENERAL ELECTRIC	2030 KSR Printer 30 CPS	1,195	115	67	43
	2120 KSR Printer 120 CPS	2,195	211	117	80
EPSON	MX-80 F/T Printer	745	71	42	27
	MX-100 Printer	895	86	48	32
TIMEPLEX	FD400 4 Channel Stat Mux	1,525	147	82	55
	FD800 8 Channel Stat Mux	2,050	197	110	74

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Supershorts

Special Systems, Inc., of Southboro, Mass., has changed its name to Scott Systems, Inc. and has obtained $3.5 million in venture capital funding from Charles River Partnership, Boston; First Chicago Investment Corp.; Hixon Venture Co., Dallas; and Hambrecht and Quist, San Francisco. The firm has also received a line of credit and fixed-asset financing of $2.9 million from U.S. Trust Co. of Boston.

— — —

Timeplex, Inc. has formed Timeplex Systems, Inc., a Canadian subsidiary with headquarters in Toronto.

Evans and Sutherland, Inc. has donated an $85,000 graphics computer system to Lehigh University for its computer-aided design and manufacturing educational and research activities.

— — —

Softsel Computer Products, Inc. has signed an agreement with Innovative Computer Products, Inc. (ICP) to provide distribution for ICP's line of Perfectdata computer care products to retail stores.

Cullinane Database Systems, Inc. has announced it will change its name to Cullinet Software, effective Feb 1. The change, according to company president John H. Cullinane, reflects the broadening nature of the company's business.

— — —

Wang Laboratories, Inc. will hold a special meeting of shareholders on Dec. 30 to consider increasing the number of authorized shares of Class B common stock from 100 million to 170 million shares.

— — —

Xytex, Inc., Woburn, Mass., has changed its name to Xyvision, Inc. to associate more closely the company's name with the primary function of its products — the integration of text, line art and graphics on terminals.

— — —

The plan of reorganization filed in August by Computer Communications, Inc. (CCI), which would have given Compudyne Corp. a 70% interest in CCI, has been withdrawn by the firm. A company spokesman said that CCI will explore alternatives including discussions with other firms that have expressed an interest in CCI as well as a possible plan of reorganization that would permit the company to remain independent.

— — —

Execucom Systems Corp., Austin, Texas, has opened a sales office, Execucom Systems, Australia, Pty., Ltd., to support the firm's major product, the interactive financial planning system, in Australia.

Harris to Sell Print Business

(Continued from Page 45)

munications equipment to semiconductors — that could get a funding boost.

Joseph A. Boyd, Harris' chairman and chief executive officer, said the sale of the printing business represents the firm's major commitment to building its information and electronics businesses.

As noted in the company's financial reports, however, the printing business was a major contributor to the revenue and profit picture of the $1.7 billion company. In fiscal 1982, the printing unit accounted for nearly 25% of total sales and profits, earning $21 million on sales of $417 million.

The company's semiconductor unit, on the other hand, reported a $4.5 million loss in fiscal 1982 on sales of $147 million. Otherwise Harris' information unit earned $11 million on sales of $324 million. The printing division, the company's oldest business, will be sold to Clayton & Dubilier, Inc. of New York, subject to a definitive contract and completion of financing arrangements.

Senate, Vendors Swap Talk

(Continued from Page 45)

prepares to update its administrative systems, which the senators rely on for corresponding with constituents, tracking legislation, scheduling meetings and hearings and preparing speeches.

The industry executives obligingly offered the committee members a tutorial on advances in computer and communications technology. Appearing at the hearing or submitting testimony were chief executive officers and vice-presidents of IBM, Xerox Corp., Digital Equipment Corp., Harris Corp., Sperry Univac, American Bell, Inc., Datapoint Corp., Wang Laboratories, Inc., Tymshare, Inc., M/A-COM Development Corp., Dialcom, Inc. and DMW Group, Inc.

Lawrence Seligman, executive vice-president at Datapoint, noted the critical need of senators to "communicate on a face-to-face basis" and extolled videoconferencing.

Jack C. Davis, Harris Corp. senior vice-president, explained the advantages and disadvantges of baseband and broadband networks and described "briefly . . . what we are doing at Harris" in local-area networks. Politicking for functional integration, Davis informed the committee that "the integration of multiple independent systems can only take place with the successful introduction of a local-area network."

S.J. Barbera, chief executive officer of American Bell, campaigned for "intelligent network" processing, which "is particularly effective for applications designed and implemented in segments for execution on different but cooperating processors."

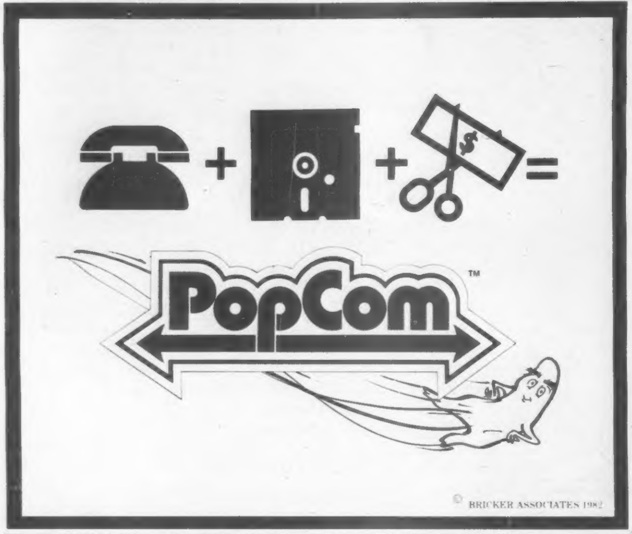
Dialcom President Robert F. Ryan reminded the Senate panel that his firm's services are already in use on Capitol Hill, citing the "widely used" Dialcom Congressional Correspondence System

Committee members responded accordingly. Committee Chairman Charles Mathias (R-Md.) expressed fascination with the "rapidly improving and advancing" technology and admitted to a certain amount of "intimidation" by the topic. He engaged DEC President Kenneth H. Olsen in a conversation on systems compatability, security, training and vendor support.

At one point, Olsen, discussing various office systems in use at DEC headquarters, pronounced, "It's this kind of thing that just makes the office a pleasant place to be."

Playing the role of the skeptical, no-nonsense consumer, Sen. Mark Hatfield (R-Ore.) cautioned his fellow committee members against the dangers of "the slickness of some of the marketing techniques being used" by the computer industry today, further warning against "unwisely embracing a multitude of systems . . . The computer system we already have in the Senate is capable of an infinite variety of new applications limited only by our imaginations and our budgets."

Hatfield did note, however, that in the future the Senate will need vastly more sophisticated systems and acknowledged the need for the Senate to take advantage of advances in DP-telecommunications technology. "Time," he ventured to say, "has caught up with us and caught us with our pants down."



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data processing

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Our large IBM environment operates under MVS with IMS DB/DC and TSO/SPF. We offer flexible hours, highly competitive salaries, and excellent benefits including a dental plan, credit union, educational assistance and relocation package. For immediate consideration, call Jackie Biggs, collect, 816-932-5418, or forward your resume, in confidence, to her attention.

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Research Engineer/Reasearch Programmer to MANAGE COMPUTER OPERATIONS. Must have a BS Degree in Electrical Engineering, Computer Science, or a related scientific field and should possess in-depth knowledge of operating systems and computer hardware. Operating experience with VAX (operating under UNIX) computers involving both hardware and software is highly desirable. Experience in supervision is desired.

Management responsibilities will include the day to day operation of a computer facility including 2 VAX 11/780 computers and several small computers. Ability to interact effectively with a broad spectrum of users, vendors and staff is essential.

Position is full-time academic/professional in the category of Research Engineer/Research Programmer and is available immediately. The salary range is open, depending on the candidates qualifications. All candidates judged as qualified for the position will be interviewed. Interviews may take place during the application period, but no final decision will be made until after January 15, 1983, the deadline for full consideration of applications.
Interested persons should contact and send complete resume to **L. F. Selander, Coordinated Science Laboratory, University of Illinois, 1101 W. Springfield Ave., Urbana, IL 61801, 217/333-2515.**

The University of Illinois at Urbana-Champaign is an Affirmative Action/Equal Opportunity Employer.

CHAIRPERSON COMPUTING SCIENCE TRINITY UNIVERSITY SAN ANTONIO, TEXAS

Applications are invited for the position of Chairperson, Department of Computing and Information Sciences. This is a tenure-track position at the rank of Professor or Associate Professor. Applicants must hold the Ph.D. in Computer Science or a closely related discipline. Experience in various academic positions coupled with an established record of teaching, administrative ability, service and research are desirable. Starting date is August 1983. Rank and salary are negotiable, dependent on qualifications and experience. Chairperson will teach a total of 6 hours per semester in computer science courses at both the graduate and undergraduate levels, conduct research, advise students, and serve on appropriate committees.

Department currently consists of seven full-time faculty and some part-time lecturers; offers the BS and MS degrees; has 215 undergraduate majors and about 60 graduate students; was founded in 1969 and supplies all of Trinity's service coursework in computer science, in addition to the major programs. Computing facilities include: IBM 3031 with 4096K, 3 B char disk storage, more than 40 timesharing terminals devoted to faculty and student use, several mini-computers, a microcomputer laboratory, and a graphics laboratory.

Trinity University was founded in 1869 and is now located on a beautiful 100 acre campus in San Antonio. Enrollment is approximately 3200 students. San Antonio is widely recognized as one of America's unique cities. Population is approximately one million. San Antonio has a warm climate and is noted for its scenic beauty, places of historical interest and diverse cultural influence.

Send resume and letters of recommendation to: Dr. C.J. Trimble, Department of Computing and Information Sciences, 715 Stadium Drive, San Antonio, Texas, 78284. Deadline for application with letters of recommendation: March 15, 1983.

Trinity University is an equal opportunity/ affirmative action employer.

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We are a progressive, San Francisco based S & L seeking a senior programmer analyst to take charge of financial on-line application development. Qualified candidates should have a minimum of 5 years experience with the NCR CLASS On-line system applications. Candidates should have knowledge of recent changes in the Savings and Loan industry with regard to Savings, Loan and DDA account processing. Knowledge of VRX would be a plus, as we are currently processing under VRX on two NCR 8565's.

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Computer Services Director

Iowa Western Community College at Council Bluffs, Iowa invites applicants for the position of Director of the Computer Center. Candidates should have a minimum of a BS Degree, MS preferred, and at least 5 years of managerial experience in a computing facility. Demonstrating competency in management, programming, languages and interpersonal skills to deal with computer users. The director will be responsible for all computer service to the college and outside users including accounting, student records, instruction, and other college functions. Hardware available: IBM 4331, PRIME 750 and numerous micros. Position will be open until filled. Salary is competitive and negotiable with liberal fringe benefits. Send letter of application, resume and references to **Employee Relations, Iowa Western Community College, 2700 College Rd., Box 4C, Council Bluffs, Iowa 51502.**

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For confidential consideration, please forward a complete resume or write for an application to: **Mr. Fred W. Hebert, Senior Industrial Relations Representative, CIBA-GEIGY Corporation, P.O. Box 11, St. Gabriel, Louisiana 70776.** An equal opportunity employer m/f.

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MANAGER OF SYSTEMS PROGRAMMING

SYSTEMS PROGRAMMER

University Computer Center seeks individuals for above positions for three person systems programming team. Current environment includes IBM 4341 supported by OS/VS1, CICS, VSAM, VM/CMS. B.S. Degree and technical experience required. Forward resume with references and salary requirements by January 17, 1983 to:

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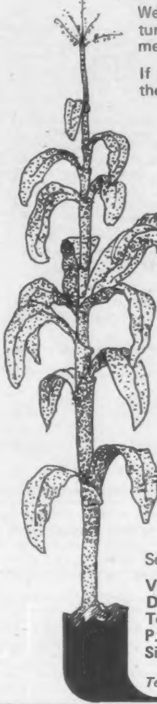

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We are an Iowa-based manufacturer, distributor and retailer of agricultural products. Our MIS division is embarking on an aggressive development effort that will touch every segment of the company.

If your career background and goals match the requirements in any of the following positions, we'd like to hear from you.

Project Leader

Demonstrated background directing functional design/programming of major on-line systems in a data base environment. Must have a top management business-oriented perspective combined with technical leadership. Ten years' experience, including at least five years managing multiple large interactive systems development. College degree required.

Systems Analyst

Responsible for conceptional design of large-scale projects, functional specs and structured detail designs. Required to supervise and train other analysts and programmers. Minimum five years' design and supervisory experience. College degree preferred.

Senior Programmer Analyst

Complete projects from initial design state while supervising one or more programmers. Carry major responsibility for meeting time and resource requirements. Demonstrate outstanding technical ability in all areas of applications development. Minimum five years' experience. College degree preferred.

We are currently operating in an IBM 4341-2 environment – V/M, CICS with a migration to a 308X under MVS. New development will be under IDMS. OLQ, ADS, CULPRIT and others available.

Send resume and salary history to:

Vice President—Personnel
Department CW
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Career challenge for a well-organized person to supervise operators and programmers. Work with our multiple DEC 11 CPUs to create support software for our computer graphics operation.

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Computer Science Department
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716-883-7000 x 413 or 415

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Join a growing firm that designs, manufactures, sells and services teller terminal systems for the financial industry.

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We offer an excellent salary plus generous fringe benefits. Send your resume to: **Jennifer Tippet, ISC Systems Corporation, P.O. Box TAFC-8, Spokane, WA 99220.** We are an equal opportunity employer.

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WYOMING

Higher Education Computer Network

The Wyoming Higher Education Computer Network (WHECN) is operated by the University of Wyoming to serve the instructional and administrative computing needs of the State's seven community colleges. Each college has substantial administrative and academic computers in addition to a connection to the CDC CYBER 730 and 760 computing facility at the University in Laramie. Two positions are available for immediate hire in support of this activity.

Manager/Programmer

This position will report to the Director, Division of Computer Services, and will have the responsibility for coordinating all WHECN activities. Duties will include budget recommendation and monitoring, planning, procurement, and coordinating maintenance and operation of the WHECN computing facilities. Programming support and analysis will also be required to ensure the highest quality computational service to the community colleges. The Manager will supervise two other professional personnel.

A bachelor's degree and proven excellence in verbal and written communications skills are required as is a broad technical knowledge and firsthand experience of computational requirements within an educational institution. Six years of related experience including two years of supervisory experience is necessary. An advanced degree is preferred.

A substantial amount of in-state travel will be necessary.

Coordinator - Instructional User Services

This position will coordinate all academic computing activities for the seven Wyoming Community Colleges. This includes systems programming (compilers, operating systems), software and hardware installation, applications and package support, as well as consulting services to faculty and staff. Computer assisted instruction, graphics, and communications are some of the most active projects.

A bachelor's degree in Computer Science or a related field, or an equivalent combination of education and experience is required. At least two years of related experience in computer use and application is necessary.

This position will require some travel within the state.

These positions offer a competitive salary and a full University benefit package. Location is in Laramie, a pleasant city with a population of 25,000 in the Rocky Mountain area and home of the University, which serves 10,000 full-time students in all disciplines.

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Sandia needs experienced professionals to participate in the design and implementation of a network which includes CRAY, IBM, and VAX computers. Analysts with specific knowledge of operating systems for these computers or with experience in local area networking are especially encouraged to apply.

Applicants must have an MS or PhD in Computer Science, an EE or a related discipline and 2-5 years of experience in the installation and modification of systems software.

Please send resume to: **Sandia National Laboratories, Mail Code 8212-4, Livermore, CA 94550.**

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Sandia National Laboratories
Livermore, California

COMPUTING SCIENCE
FACULTY POSITION
TRINITY UNIVERSITY
SAN ANTONIO, TEXAS

Tenure-track position at the rank of Assistant Professor of Computing and Information Sciences. Ph.D.in Computer Science or equivalent required. Starting date is August 1983. Salary is commensurate with background and experience. Will teach a total of 9 hours per semester in computer science courses at both the graduate and undergraduate levels, conduct research, advise students, and serve on appropriate committees.

Department currently consists of seven full-time faculty and some part-time lecturers; offers the BS and MS degrees; has 215 undergraduate majors and about 60 graduate students; was founded in 1969 and supplies all of Trinity's service coursework in computer science in addition to the major programs. Computing facilities include: IBM 3031 sith 4096K, 3 B char disk storage, more than 40 timesharing terminals devoted to faculty and student use, several minicomputers, a microcomputer laboratory, and a graphics laboratory.

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Send resume and letters of recommendation to: Dr. C.J. Trimble, Department of Computing and Information Sciences, 715 Stadium Drive, San Antonio, Texas, 78284. Deadline for application with letters of recommendation: March 15, 1983.

Trinity University is an equal opportunity/ affirmative action employer.

DATA PROCESSING
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Central Washington University is currently seeking an ambitious person to perform systems analysis and programming of administrative information processing systems, using a DEC VAX-11/780.

Minimum Qualifications: One year of experience as a System Analyst/Programmer II or equivalent; OR six months' experience as a Systems Analyst/Programmer II or equivalent and a Master's Degree in a job related area; OR one year experience in programming and/or analysis and a Bachelor's Degree in a job related area. VAX-11, DCL, FMS-11, and Datatrieve programming experience desirable.

Salary range is $1,625 - $2,080 per month. Job entry at minimum salary.

Applications will be accepted until January 3, 1983. Contact Geraldine Hatten, Personnel & Benefits, Central Washington University, Ellensburg, WA 98926. (509) 963-1202.

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Our MIS department is seeking a Statistical Business Analyst. You must have an MBA with a major in statistics/market research. Ability to develop statistical financial packages utilizing state-of-the-art computer systems, familiarity with advanced forecasting techniques and econometric-type analysis are requisites for this challenging position. 40 hour week. Annual salary is $21,000. Qualified applicants may send resumes and salary history to: **Ohio Bureau of Employment Services, 3135 Euclid Ave., Cleveland, OH 44115, Attention Mildred McGill, Order #0221015.**

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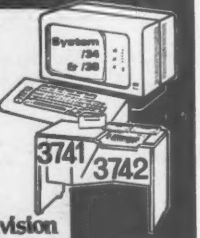

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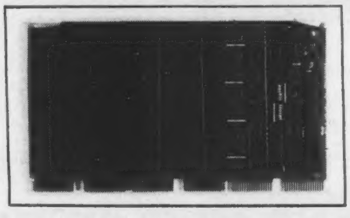

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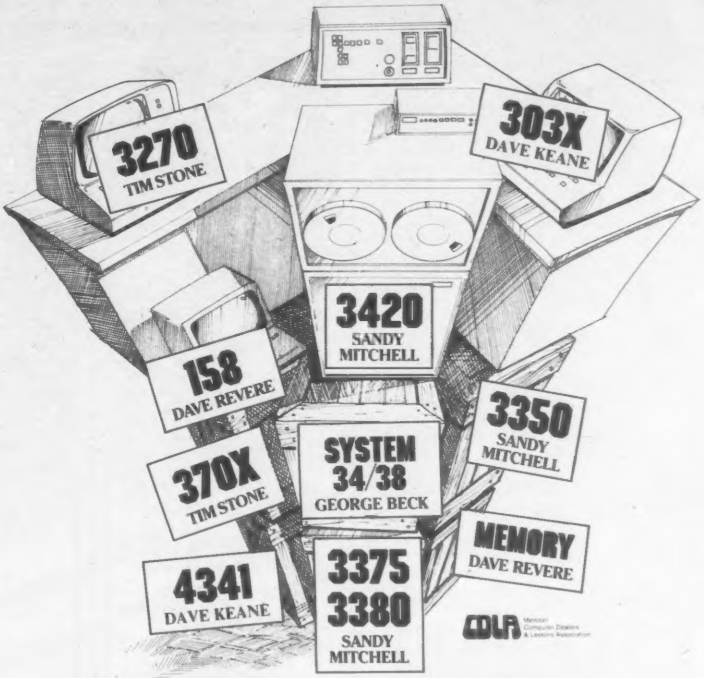

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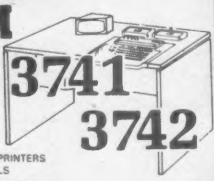

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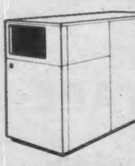

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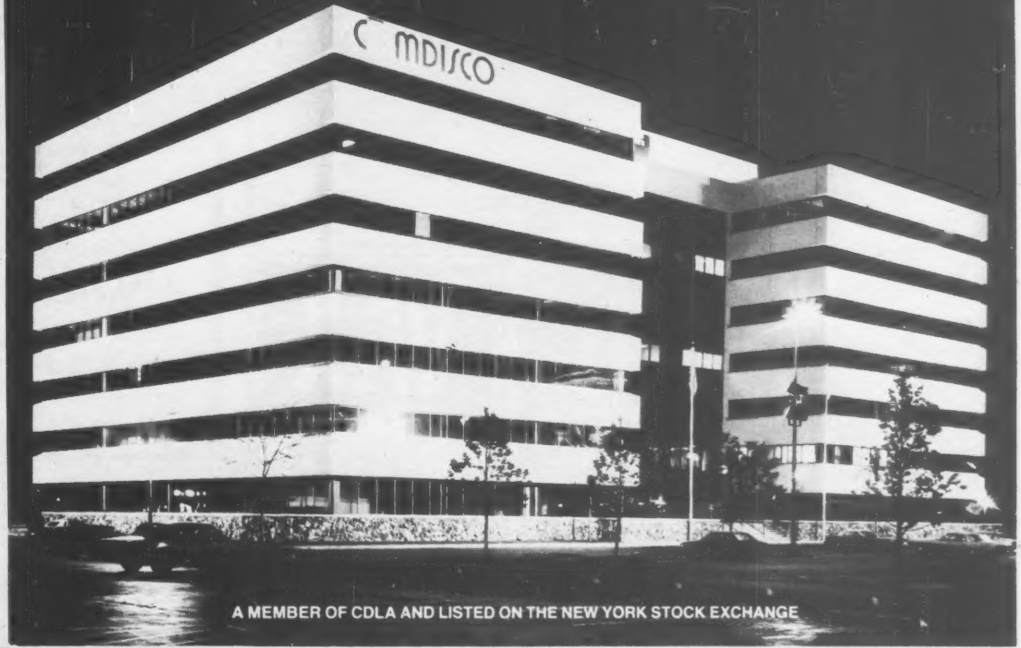

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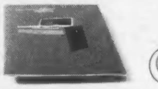

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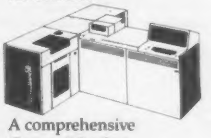

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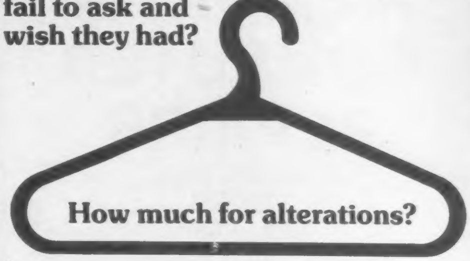
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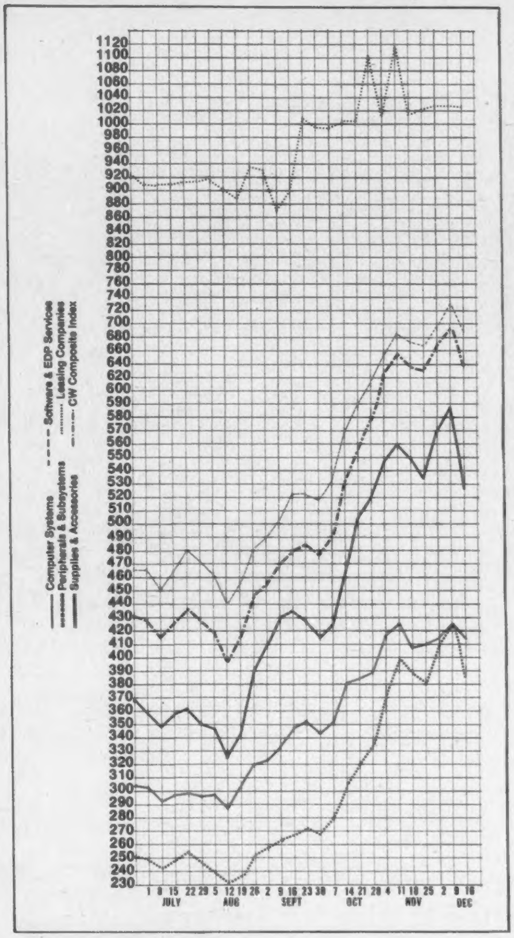

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TRADE QUOTES, INC
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E X C H		PRICE			
		1981-82 RANGE (1)	CLOSE DEC 15 1982	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
A	AMDAHL CORP	17- 35	28 3/8	-3	-9.5
N	BURROUGHS CORP	28- 48	39 3/8	-4 1/8	-9.4
O	COMPUTER AUTOMATION	7- 17	15	-1 3/4	-10.4
N	CONTROL DATA CORP	21- 42	37 1/8	-2 5/8	-6.6
N	CRAY RESEARCH INC	20- 45	37 1/2	-7 3/8	-16.4
N	DATA GENERAL CORP	20- 58	36 3/8	-4 3/8	-10.7
N	DATAPOINT CORP	11- 54	17 1/4	-3	-14.8
N	DIGITAL EQUIPMENT	62-113	95	-14	-12.8
A	EECO INC	6- 11	9 3/4	- 1/4	-2.5
N	ELECTRONIC ASSOC.	5- 12	9 7/8	-1 5/8	-14.1
N	FLOATING POINT SYST	16- 30	25 1/8	-4 7/8	-16.2
N	FOXBORO	22- 38	33 7/8	- 1/2	-1.4
O	FULCRUM COMP GRP	1- 3	1/4	0	0.0
O	GENERAL AUTOMATION	3- 8	4 3/8	-1 5/8	-27.0
N	HARRIS CORP	20- 43	37	- 5/8	-1.6
N	HEWLETT-PACKARD CO	36- 82	70 1/2	-8 1/2	-10.7
N	HONEYWELL INC	60-104	83 5/8	-11 1/8	-11.7
N	IBM	48- 95	88 3/8	-5 1/8	-5.4
O	IPL SYSTEMS INC	5- 9	7	-1	-12.5
O	MAGNUSON COMP SYSTS	2- 16	2 5/8	- 3/8	-12.5
N	MANAGEMENT ASSIST	7- 18	10 3/8	-2 1/8	-17.0
O	MINI-COMPUTER SYST	1- 4	1/2	0	0.0
N	MODULAR COMPUTER SYS	6- 13	11 3/8	-1 3/8	-10.7
N	MOHAWK DATA.SCI	10- 18	14	-2	-12.5
N	NCR	38- 95	80	-13 1/8	-14.0
N	PERKIN-ELMER	17- 32	26 1/2	-3 1/2	-11.6
N	PRIME COMPUTER INC	16- 38	33 3/4	-3 3/8	-9.0
N	SPERRY CORP	21- 37	31 1/4	-3 1/2	-10.0
O	TANDEM COMPUTERS INC	14- 34	22 3/4	-1	-4.2
N	TEXAS INSTRUMENTS	71-151	128	-17	-11.8
A	WANG LABS "B"	25- 63	53 1/2	-9	-14.3
A	WANG LABS "C"	21- 61	53 1/4	-7	-11.6
	LEASING COMPANIES				
O	BOOTHE FINANCIAL CP	22- 28	28 3/4	+ 1/2	+1.8
N	COMDISCO INC	13- 35	32 7/8	-1 5/8	-4.7
B	COMMERCE GROUP CORP	1- 1	1/4	- 1/8	-33.3
O	COMPUTER INVSTRS GRP	1- 2	3/8	0	0.0
O	CONTINENTAL INFO SYS	5- 20	10 1/4	-7 1/2	-42.2
N	DPF INC	5- 13	9	- 3/8	-4.0
O	ITEL	1- 5	1 1/2	+ 5/8	+71.4
O	LEASPAC CORP	1- 2	1/8	0	0.0
N	U.S. LEASING	18- 37	35 1/2	-1 3/4	-4.6

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH; B=BOSTON
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
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(1) TO NEAREST DOLLAR

E X C H		PRICE			
		1981-82 RANGE (1)	CLOSE DEC 15 1982	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 6	1 7/8	0	0.0
O	ADVANCED SYSTEMS INC	9- 19	18 3/4	+ 1/4	+1.3
O	AGS COMPUTERS INC	7- 17	15 1/2	-1 3/4	-10.1
N	ANACOMP INC	9- 18	16 1/8	- 5/8	-3.7
O	ANALYSTS INTL CORP	5- 8	8	- 1/4	-3.0
A	APPLIED DATA RES.	16- 42	38 1/8	-3 7/8	-9.2
O	ASK COMPUTER SYSTEMS	12- 27	20 1/8	-6 1/4	-23.6
B	ASTRADYNE COMP IND	1- 5	1 7/8	- 1/8	-6.2
N	AUTOMATIC DATA PROC	21- 37	32 7/8	-4 1/8	-11.1
O	CGA COMPUTER ASSOC	5- 9	8 1/2	+ 1/4	+3.0
O	COMPUTER ASSOC INT'L	12- 38	36	-1 1/2	-4.0
O	COMPUTER HORIZONS	1- 3	7 1/4	+ 1/4	+3.5
O	COMPUTER NETWORK	4- 9	7 3/8	-1 1/2	-16.9
N	COMPUTER SCIENCES	11- 20	17 5/8	-2 1/2	-12.4
O	COMPUTER TASK GROUP	8- 18	13 1/2	-2 1/4	-14.2
O	COMPUTER USAGE	2- 5	3 1/2	0	0.0
O	COMPUTONE SYSTEMS	13- 30	24 5/8	-5 1/8	-17.2
O	COMSERV CORP	11- 20	18 3/4	- 1/2	-2.8
O	COMSHARE	6- 10	5 1/2	- 1/4	-4.3
N	CULLINANE DATABASE	24- 53	47	-2 1/2	-5.0
O	CYCARE SYSTEMS INC	9- 18	15 1/2	-1 1/4	-7.4
O	DATA DIMENSIONS INC	1- 3	1/4	0	0.0
O	DATATAB	1- 4	1/2	- 1/4	-33.3
O	DYATRON CORP	2- 4	2 7/8	- 1/8	-4.1
N	ELECTRONIC DATA SYST	19- 50	45	-3 3/4	-7.6
O	INFORMATICS INC	10- 24	21 7/8	- 5/8	-2.7
O	INSYTE CORP	1- 3	1 5/8	0	0.0
O	IPS COMPUTER MARKET.	1- 2	1 1/4	0	0.0
O	KEANE ASSOCIATES	4- 5	5 1/4	0	0.0
A	LOGICON	12- 29	27 1/2	- 7/8	-3.0
O	MNGT SCI AMER INC	18- 42	36 3/4	-4 1/2	-10.9
O	MATHEMATICA INC	12- 18	16 1/2	0	0.0
O	MATHEMATICAL APP GRP	12- 19	14 1/2	0	0.0
O	NATIONAL DATA CORP	13- 26	22 3/4	-2 3/4	-10.7
O	PANSOPHIC SYSTEMS	8- 20	17 1/4	-2	-10.3
N	PLANNING RESEARCH	6- 11	9 7/8	-1 1/8	-10.2
O	PROGRAMMING & SYS	1- 3	2 5/8	+ 1/2	+23.5
O	REYNOLDS & REYNOLD	17- 27	26 1/2	- 1/4	-0.9
O	SEI CORP	21- 45	39 3/4	-4 1/4	-9.6
O	SHARED MEDICAL SYST	26- 54	50 3/4	-2 3/8	-4.4
O	SCIENTIFIC COMPUTERS	8- 13	11	-2	-15.3
O	SOFTWARE AG	5- 17	11 1/2	-2 1/4	-16.3
N	TYMSHARE INC	12- 30	18 1/2	-3 1/2	-15.9
A	URS CORP	10- 15	14 1/2	- 1/8	-0.8
N	WYLY CORP	7- 13	10 1/2	+ 1/4	+2.4
	PERIPHERALS & SUBSYSTEMS				
N	AM INTERNATIONAL	1- 15	2 1/2	0	0.0
A	ANDERSON JACOBSON	9- 26	23	-2 3/4	-10.6
O	AUTO-TROL TECHNOLOGY	8- 18	15	-2 1/8	-12.4
O	BANCTEC INC	7- 33	13	-1 3/4	-11.8
A	BEEHIVE INT'L	4- 9	8 5/8	+1 1/4	+16.9
A	BOLT.BERANEK & NEW	9- 34	33 1/8	-1 1/4	-3.6
O	CAMBEX CORP	2- 4	2	- 3/8	-15.7
N	CENTRONICS DATA COMP	8- 17	13 1/2	-1 1/2	-10.0
A	CETEC CORP	4- 6	5 5/8	- 3/8	-6.2
O	COGNITRONICS	2- 8	5 5/8	- 3/4	-11.7
O	COMPUTER COMMUN.	1- 2	3/4	0	0.0
A	COMPUTER CONSOLES	15- 39	34 5/8	-4	-10.3
O	COMPUTER DEVICES INC	4- 21	10 7/8	-3 1/2	-24.3
O	COMPUTER TRANSCEIVER	4- 7	6 3/8	- 5/8	-8.9
N	COMPUTERVISION CORP	19- 38	28 3/4	-2 3/4	-8.7
N	CONRAC CORP	21- 36	32 7/8	-1 7/8	-5.3
A	DATA ACCESS SYSTEMS	2- 5	1 1/4	- 1/8	-9.0
A	DATAPRODUCTS CORP	16- 35	30 1/2	-3 1/2	-10.2
A	DATARAM CORP	5- 10	9 1/4	- 7/8	-8.6
O	DATUM INC	2- 5	3 5/8	- 7/8	-19.4
O	DAVID JAMISON CARLYL	2- 7	3 3/4	- 7/8	-18.9
O	DECISION DATA COMPUT	3- 14	12 1/8	-1 7/8	-13.3
O	DELTA DATA SYSTEMS	1- 3	2 3/4	- 1/2	-15.3
N	ELECTRONIC M & M	5- 8	6 1/4	- 7/8	-12.2
O	EVANS & SUTHERLAND	18- 48	43 3/8	-4 5/8	-9.6
O	GANDALF TECHNOLOGIES	10- 22	15	-1 1/2	-9.0
N	GEN'L DATA COMM IND	6- 18	17 1/2	- 5/8	-3.4
O	GENERAL TERMINAL CP	0- 4	1/2	0	0.0
O	GREAT SOUTHWEST IND	3- 9	2 1/2	0	0.0
N	HAZELTINE CORP	22- 43	38	-3 3/4	-8.7
O	ICOT CORP	3- 9	7 3/4	-1 1/2	-16.2
O	INFORMATION INTL INC	10- 22	19	-2 1/2	-11.6
O	INTEL CORP	21- 42	34 3/4	-4 1/4	-10.8
O	IPL SYSTEMS INC	5- 9	7	-1	-12.5
A	LUNDY ELECTRONICS	7- 14	12	-1 3/4	-12.7
A	MSI DATA CORP	14- 28	24 7/8	- 5/8	-2.4
O	NETWORK SYSTEMS CORP	15- 38	31	-7	-18.4
O	OMEX	3- 8	3	0	0.0
N	PARADYNE CORP	24- 50	41 7/8	-5 1/8	-10.9
A	PENRIL CORP	7- 12	9 7/8	- 5/8	-5.9
O	RAMTEK CORP	12- 20	15 1/4	-2 1/4	-12.8
N	RECOGNITION EQUIP	4- 10	8 3/8	-1 1/8	-11.8
O	SCAN DATA	1- 5	1 1/2	0	0.0
N	STORAGE TECHNOLOGY	16- 40	21 3/4	-1 1/2	-6.4
O	SYKES DATATRONICS	6- 34	9 7/8	-2 1/4	-18.5
A	T BAR INC	7- 11	8 1/8	- 3/8	-4.4
A	TEC INC	4- 12	10 5/8	- 7/8	-7.6
N	TEKTRONIX INC	34- 61	55	-6	-9.8
N	TELEX	5- 27	21 1/2	-4 1/4	-16.5
O	TESDATA SYSTEMS CP	3- 10	6	-1	-14.2
A	TIMEPLEX INC	7- 18	16	-1 3/8	-7.9
O	VISUAL TECHNOLOGY	9- 17	13 1/2	-2 1/4	-14.2
O	WILTEK INC	1- 3	1 1/2	- 1/4	-14.2
	SUPPLIES & ACCESSORIES				
N	AMERICAN BUS PRODS	11- 18	16 1/2	- 3/4	-4.3
O	BALTIMORE BUS FORMS	1- 2	1 1/4	0	0.0
N	BARRY WRIGHT	13- 22	22 1/4	+ 1/8	+0.5
O	CYBERMATICS INC	1- 1	7/8	0	0.0
A	DUPLEX PRODUCTS INC	12- 20	18 3/4	-1	-5.0
N	ENNIS BUS. FORMS	16- 30	28	-1 1/8	-3.7
N	3M COMPANY	49- 78	70 1/8	-3 7/8	-5.2
N	MOORE CORP LTD	28- 41	40 3/8	- 1/8	-0.3
N	NASHUA CORP	9- 18	12 3/8	0	0.0
O	STANDARD REGISTER	32- 72	70	-1 1/2	-2.0
A	TAB PRODUCTS CO	12- 24	21 5/8	-2 1/8	-8.9
N	WALLACE BUS FORMS	22- 50	44 1/2	-1 1/2	-3.2

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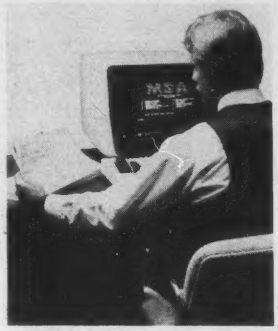

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